

APPENDIX F.

Quantitative Analysis of California Marketplace

As discussed in Appendix B (Legal Environment for Caltrans DBE Program), federal courts have held that Congress had ample evidence of discrimination in the transportation contracting industry in upholding the constitutionality of the Federal DBE Program (TEA-21), and the federal regulations implementing the program (49 CFR Part 26).

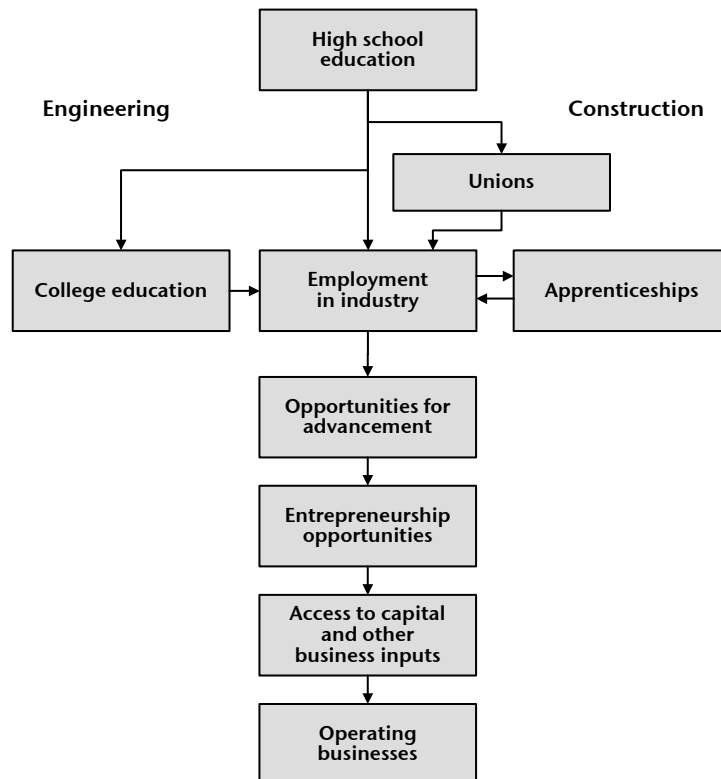
Entry into the Industry

The federal courts found Congress “spent decades compiling evidence of race discrimination in government highway contracting, of barriers to the formation of minority-owned construction businesses, and of barriers to entry.”¹ Congress found that discrimination had impeded the formation of qualified minority business enterprises.

BBC examined whether some of these barriers to entry found for the nation as a whole also appear to occur in California. BBC separately studied barriers to entry for construction and for engineering. Entrance requirements and opportunities for advancement differ for these two branches of the overall transportation contracting industry. The first half of Appendix F examines potential barriers at several steps along the business entry chronology outlined in Figure F-1.

Figure F-1.
Model for studying the
entry into industry

Source:
BBC Research and Consulting.



¹ Sherbrooke Turf, Inc., 345 F.3d at 970, (citing Adarand Constructors, Inc., 228 F.3d at 1167 – 76); Western States Paving Co. v. Washington State DOT, 407 F.3d 983 (9th Cir. 2005) at 992.

Education and Training

The paths to job opportunities, whether union programs to learn a trade or four-year college degrees in engineering, are important to understanding whether barriers affect employment opportunities for minorities and women that eventually affect the relative number of minority and female business owners.²

Construction. Construction industry employees in California typically have a high school degree with little or no college education. Based on the 2000 Census of Population, 28 percent of workers in construction were just high school graduates and 32 percent had not finished high school. Only 10 percent of people working in construction had a four-year college degree. Formal education beyond high school is not a prerequisite for most construction industry jobs.

Training is largely on-the-job and through trade schools and apprenticeship programs. Entry level jobs for workers out of high school are often laborers, helpers or apprentices. More skilled positions may require additional training through a technical or trade school or through an apprenticeship or other employer-provided training program. Apprenticeship programs can be developed by employers, trade associations, trade unions and other groups. Workers can enter apprenticeship programs from high school or a trade school. Apprenticeships have traditionally been three- to five-year programs that combine on-the-job training with classroom instruction.³

In the California workforce, African Americans and Hispanic Americans comprise a relatively large share of workers with just a high school education. In 2000, only 21 percent of African American workers 25 and older in California had a college degree, much lower than the 38 percent of non-Hispanic white workers in this age group. About 9 percent of Hispanic American workers and 19 percent of Native American workers in California had college degrees.

From these data, educational attainment does not appear to be a barrier for entry of minorities in the construction industry. Based on education requirements of entry level jobs and the limited education beyond high school for many African Americans, Hispanic Americans and Native Americans in California, one would expect a relatively high representation of these minority groups in the California construction industry.

However, given high educational levels of Asian-Pacific Americans and Subcontinent Asian Americans (among workers 25 and older, 45 percent and 67 percent of these groups have college degrees, respectively), representation of these groups in construction might be low relative to non-Hispanic whites.

The percentage of women working in California with just a high school diploma is similar to that of men based on 2000 Census of Population data.

² Feagin, Joe R. and Nikitah Imani. 1994. Racial Barriers to African American Entrepreneurship: An Exploratory Study." *Social Problems*. 41 (4): 562-584.

³ Bureau of Labor Statistics, U.S. Department of Labor. 2006-07. "Construction." *Career Guide to Industries*. <http://www.bls.gov/oco/cg/cgs003.htm> (accessed February 15, 2007).

Engineering. More than half (58 percent) of the individuals working in the engineering industry have at least a four-year college degree. When only examining people who work as engineers, this percentage increases to 82 percent.⁴

The level of education needed to become an engineer is a barrier for African Americans and Hispanic Americans. Very few Hispanic Americans and relatively few African Americans and Native Americans working in the state had a degree from a four-year college in 2000.

Figure F-2 examines the percentage of workers 25 and older who have at least a four-year degree, across all industries. About 39 percent of non-Hispanic whites working in California had at least a four-year college degree in 2000. Relatively fewer Hispanic Americans, African Americans and Native Americans working in the state had college degrees. Relatively more Asian-Pacific Americans and Subcontinent Asian Americans had college degrees than non-Hispanic whites. About as many women as men, have college degrees in California.

Figure F-2.
Percentage of all workers 25 and older with
at least a four-year degree in California and the U.S., 2000

California	Percentage of workers	United States	Percentage of workers
Race/ethnicity		Race/ethnicity	
African American	20.9 % **	African American	17.2 % **
Asian-Pacific American	44.7 **	Asian-Pacific American	43.5 **
Subcontinent Asian American	67.2 **	Subcontinent Asian American	66.8 **
Hispanic American	9.1 **	Hispanic American	12.1 **
Native American	19.1 **	Native American	15.9 **
Other minority group	32.7 **	Other minority group	29.0 **
All minority groups	21.1 **	All minority groups	20.0 **
Non-Hispanic white	38.5	Non-Hispanic white	31.0
Gender		Gender	
Female	29.8 **	Female	27.6 **
Male	30.6	Male	28.4

Note: ** Denotes that the difference in proportions between the minority and non-Hispanic white groups (or female and male gender groups) is statistically significant at the 95% confidence level.

Source: BBC Research and Consulting from 2000 U.S. Census 5% Public Use Micro-sample data. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

Additional indices of high school educational attainment. Because of the importance of college admission as a step in entering the engineering industry, the study team examined additional information on the educational achievement of minority high school students in California. The California Legislative Black Caucus published a report in early 2007 that included indices of high school achievement for African Americans, Asian Americans, Hispanic Americans and non-Hispanic whites. The study team translated the reported statistics into indices where 100 is the value for non-Hispanic white students. A figure lower than 100 indicates a lower rate for minority students.

⁴ BBC Research and Consulting from 2000 U.S. Census 5% Public Use Micro-sample data. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

As shown in Figure F-3, high school achievement indices ranged from 52 to 88 for African American students and from 59 to 88 for Hispanic American students. For example, only 25.2 percent of African American students had completed necessary courses for admission to a University of California or California State University school in 2004-2005. This was far below the rate for non-Hispanic white students (40.9 percent). The study team created an “index” for African American student achievement for completion of necessary courses by dividing 25.2 percent into 40.9 percent, yielding “62.” Hispanic American students had an achievement index of 59 when compared with non-Hispanic white students completing courses for U.C./C.S.U. entrance.

Other notable indices for African Americans included:

- Passing the high school exit exam for English at a rate roughly one-half that of non-Hispanic white students;
- Passing the high school exit exam for math at less than two-thirds the rate of non-Hispanic white students; and
- Having a high school dropout rate more than twice that of non-Hispanic white students.

The achievement index with the least disparity between African Americans and whites was reading scores from the standardized achievement test administered to students in the 11th grade.

Hispanic American students, on average, exhibited similar disparities in achievement as found for African American students. Hispanic American students were closer to non-Hispanic white students in the rate of passing the high school exit exam for math. High school dropout rates were lower for Hispanic Americans than for African Americans, but still double that of non-Hispanic whites. Overall, the California Legislative Black Caucus report showed educational outcomes for Asian American students to be on par with non-Hispanic whites.

It appears that disparities in educational achievement in high school or in prior grades are important in explaining the relatively low number of African Americans and Hispanic Americans that have college degrees in California. There are many studies throughout the nation that consider whether the causes of the disparities in educational outcomes for African American and Hispanic American high school students are affected by discrimination; these are not reviewed here.

Figure F-3.
Indices of high school achievement for African Americans, Asian Americans,
Hispanic Americans and Non-Hispanic whites in California, 2004-2005 (white=100)

	African American	Asian American	Hispanic American	Non-Hispanic white
Completed courses for U.C./C.S.U. entrance 2004-2005	62	144	59	100
CAT/6 Reading Scores (11th grade)	88	101	88	100
High school exit exam passing rate: English	52	108	64	100
High school exit exam passing rate: Math	62	86	62	100
SAT average score	79	98	83	100
High school dropouts: 1 year rate	275	70	200	100
High school dropouts: 4 year rate	276	70	210	100

Note: Data for completed courses for U.C./C.S.U. entrance were for 2004-2005. Dates not provided in source for other educational statistics.

Source: BBC Research & Consulting from California Legislative Black Caucus. 2007. The State of Black California, Full Report, Sacramento.

Additional factors affecting college engineering programs in California. Historically, college engineering programs in the United States were slow to open doors to minorities such as African Americans.⁵ Today, California stands out as having low percentages of African American engineering students. Out of the top 26 engineering schools in 2002, four are University of California campuses (UC Berkeley, UC Los Angeles, UC Santa Barbara, and UC San Diego). A recent study identified these schools for the lowest percentages of African American engineering students among the top 26:⁶

- In fall 2002, the University of California-Berkeley had 65 African American students among 4,941 full-time engineering students (1.4 percent of the engineering students), similar to the absolute number and relative share of engineering students at UCLA.
- There were 23 African Americans among 2,370 total engineering students at UC-Santa Barbara
- UC-San Diego had no African Americans among its 5,264 engineering students in fall 2002.

Because the enrollment statistics for engineering students were for 2002, most of these students enrolled in college after Proposition 209 had gone into effect. Many scholars blame Proposition 209 for the relatively low representation of African American and Hispanic American students at more selective colleges in California.^{7,8} Proposition 209 changed the ability of California's public colleges to give preferential treatment to minorities and women in college admissions and financial aid unless part of a federal program. This amendment to the California constitution was passed by voters in 1996 and went into effect in 1998.

To understand the broader patterns of enrollment by race and ethnicity in the four University of California schools with the highest-rated engineering programs, the study team examined African American, Hispanic American and Native American enrollment as freshmen in 1995 and in 2003. As shown in Figure F-4 on the following page:

- Enrollment of African American students was cut by half for UC-Berkeley and UCLA between 1995 and 2003. There was little overall change for UC-Santa Barbara and UC-San Diego.
- Declines in enrollment of Hispanic Americans also occurred at UC-Berkeley and UCLA. Enrollment of Hispanic Americans increased at UC-Santa Barbara and UC-San Diego.
- Enrollment of Native Americans dropped markedly at each of the four University of California campuses.

Total enrollment at each campus grew over this period, with non-Hispanic white and Asian-Pacific students accounting for most of the increases. The enrollment declines for African American and Hispanic American students between 1995 and 2003 were because of fewer offers of admission from these schools; applications from African American and Hispanic American students actually increased over this period.

⁵ Unknown Author. 2003. "Blacks Strive to Build a Bridgehead in Academic Engineering." *The Journal of Blacks in Higher Education*. 41 (Autumn): 98-108, 98.

⁶ Unknown Author. 2003. "Blacks Strive to Build a Bridgehead."

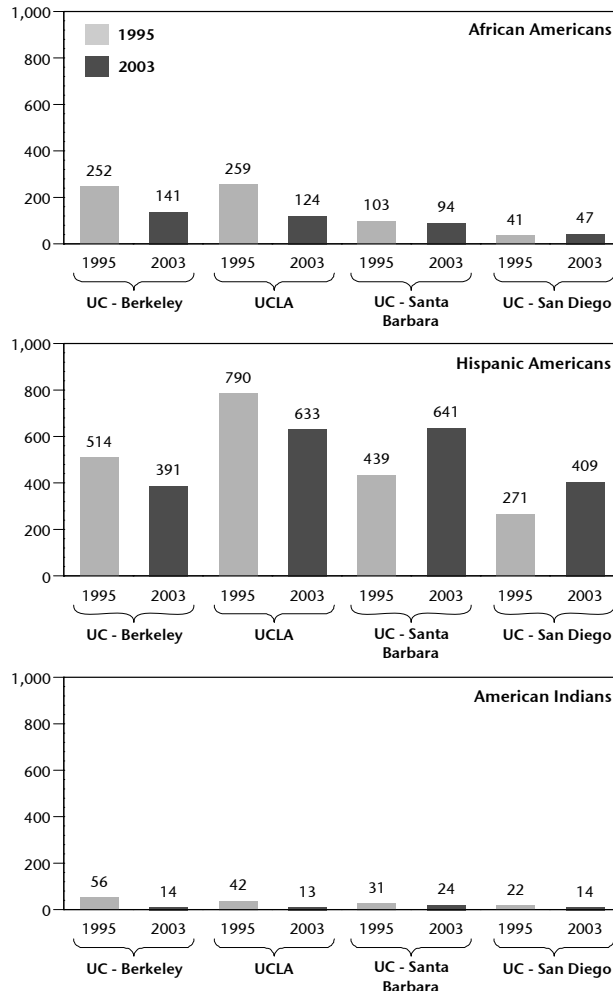
⁷ Contreras, Frances. 2003. "The Reconstruction of Merit Post-Proposition 209." *Educational Policy*. 19 (2): 371-395.

⁸ Karabel, Jerome. 1999. "The Rise and Fall of Affirmative Action at the University of California." *The Journal of Blacks in Higher Education*. 25 (Autumn): 109-112.

Figure F-4.
Enrollment of resident California
freshman at selected University of
California campuses

Source:

UC Office of the President, Student Academic Services, IA&SA,
 REG004/006 and campus reports, Jan 04 f03/flowfr_0395.



Employment

With educational opportunities and attainment for minorities and women as context, the study team examined employment in construction and engineering in California.

Construction. Based on 2000 Census of Population data, nearly one-half of people working in the California construction industry in 2000 were minority. Of the people working in construction:

- 37 percent were Hispanic Americans;
- 4 percent were African Americans;
- 4 percent were Asian-Pacific Americans;
- 1.5 percent were Native Americans; and
- 0.2 percent were Subcontinent Asian Americans.

Representation of Hispanic Americans in the construction industry is considerably higher than for all industries as a whole (37 percent in construction and 29 percent in all industries in California). U.S. Census of Population data for 2000 showed that 16 percent of people working in construction in California were Hispanic Americans, about the same as for all industries in the state in that year.

African Americans and Asian-Pacific Americans working in California are relatively less likely to work in construction:

- Asian-Pacific Americans were 4.0 percent of the construction workforce and 11.2 percent of all workers in California in 2000 (a statistically significant difference). The fact that Asian-Pacific Americans are more likely to go to college than other groups may explain part of this difference.
- African Americans were 4.3 percent of the construction workforce and 6.5 percent of all workers in California (a statistically significant difference). Average educational attainment of African Americans is consistent with requirements for construction jobs, so education cannot explain the difference. A number of studies throughout the United States have argued that race discrimination by construction unions have held down employment of African Americans in construction trades.⁹
- Relative under-representation of African Americans and Asian-Pacific Americans was found in both 1980 and in 2000.¹⁰ For example, 4.0 percent of construction industry workers were African American in 1980 compared with 4.3 percent in 2000.

Between 1980 and 2000, the share of construction workers in the United States who are women increased from 8.9 percent to 10.2 percent. In 2000, 9.9 percent of people working in the California construction industry were women, slightly less than in 1980. Figure F-5 on the following page compares the composition of the California construction industry with the total California workforce.

⁹ Waldinger, Roger and Thomas Bailey. 1991. "The Continuing Significance of Race: Racial Conflict and Racial Discrimination in Construction." *Politics & Society*, 19(3).

¹⁰ Note that Census definitions of race and ethnicity have changed over time, which affects comparability of statistics from one census year to the next. Appendix E (Analysis of U.S. Census of Population Data) discusses how BBC coded data concerning race and ethnicity for each decennial census.

Figure F-5.
Demographics of workers in construction and all
industries in California and the US, 1980 and 2000

California				
	Construction		All industries	
	1980 (n = 39,196)	2000 (n = 60,113)	1980 (n = 679,838)	2000 (n = 966,244)
Race/ethnicity				
African American	4.0 % **	4.3 % **	6.6 %	6.5 %
Asian-Pacific American	1.9 **	4.0 **	5.0	11.2
Subcontinent Asian American	0.1 **	0.2 **	0.2	1.1
Hispanic American	15.6 **	36.9 **	16.7	29.0
Native American	1.3 **	1.5 **	0.9	1.2
Other minority group	<u>0.2</u>	<u>0.9</u>	<u>0.2</u>	<u>0.9</u>
Total minority	23.1 %	47.8 %	29.6 %	49.7 %
Non-Hispanic white	<u>77.0</u> **	<u>52.2</u> **	<u>70.4</u>	<u>50.3</u>
Total	100.0 %	100.0 %	100.0 %	100.0 %
Gender				
Female	10.3 % **	9.9 % **	45.9 %	46.5 %
Male	<u>89.7</u> **	<u>90.1</u> **	<u>54.2</u>	<u>53.5</u>
Total	100.0 %	100.0 %	100.0 %	100.0 %
United States				
	Construction		All industries	
	1980 (n = 391,361)	2000 (n = 579,867)	1980 (n = 6,338,776)	2000 (n = 8,295,671)
Race/ethnicity				
African American	7.7 % **	7.5 % **	9.9 %	11.4 %
Asian-Pacific American	0.6 **	1.3 **	1.4	3.4
Subcontinent Asian American	0.1 **	0.2 **	0.2	0.7
Hispanic American	5.7 **	15.8 **	5.6	11.3
Native American	0.9 **	1.6 **	0.6	1.2
Other minority group	<u>0.1</u>	<u>0.4</u>	<u>0.1</u>	<u>0.4</u>
Total minority	15.1 %	26.8 %	17.7 %	28.4 %
Non-Hispanic white	<u>84.9</u> **	<u>73.2</u> **	<u>82.3</u>	<u>71.6</u>
Total	100.0 %	100.0 %	100.0 %	100.0 %
Gender				
Female	8.9 % **	10.2 % **	46.0 %	47.9 %
Male	<u>91.1</u> **	<u>89.8</u> **	<u>54.0</u>	<u>52.1</u>
Total	100.0 %	100.0 %	100.0 %	100.0 %

Note: ** Denotes that the difference in proportions between the construction and all industry groups for the census year is statistically significant at the 95% confidence level.

Source: BBC Research and Consulting from 1980 and 2000 U.S. Census 5% Public Use Micro-sample data. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

Importance of unions in entering the construction industry. Labor scholars characterize construction as a historically volatile industry sensitive to business cycles, making the presence of labor unions important for stability and job security within the industry.¹¹ The temporary nature of construction work results in uncertain job prospects, and high turnover of laborers presents a disincentive for construction firms to invest in training. Some scholars have claimed that constant turnover has lent itself to informal recruitment practices and nepotism, compelling laborers to tap social networks for training and work. They credit the importance of social networks with the high degree of ethnic segmentation in the construction industry.¹² Unable to integrate themselves into traditionally white social networks, African Americans faced long-standing historical barriers to entering the industry.¹³

Construction unions aim to provide a reliable source of labor for employers and preserve job opportunities for workers by formalizing the recruitment process, coordinating training and apprenticeships, enforcing standards of work and mitigating wage competition. The unionized sector of construction would seemingly be the best inroad for African American and other underrepresented groups into the industry. However, researchers have identified discrimination by trade unions that have historically prevented minorities from obtaining employment in skilled trades.¹⁴

- Unions have used admissions criteria that adversely affect minorities. Federal courts ruled in the 1970s that standardized testing requirements unfairly disadvantaged minority applicants who had less exposure to testing and that requirements that new union members have relatives in the union perpetuate the effects of past discrimination.¹⁵ More recent disparity studies in California reveal that these practices persist: admissions testing requirements for union membership were still being used that adversely affected minorities,¹⁶ and applicants who were relatives of union members were often waived from admissions requirements.¹⁷
- Of those minority individuals who are admitted to unions, a disproportionately low number are admitted into apprenticeship programs coordinated by unions. Apprenticeship programs are an important means of producing skilled construction laborers, and the reported exclusion of blacks from these programs has severely limited their access to skilled occupations in the construction industry.¹⁸

¹¹ Applebaum, Herbert. 1999. *Construction Workers, U.S.A.* Westport: Greenwood Press.

¹² Waldinger, Roger and Thomas Bailey. 1991. "The Continuing Significance of Race: Racial Conflict and Racial Discrimination in Construction." *Politics & Society*, 19(3).

¹³ Feagin, Joe R. and Nikitah Imani. 1994. "Racial Barriers to African American Entrepreneurship: An Exploratory Study." *Social Problems*. 41(4): 368-370.

¹⁴ U.S. Department of Justice. 1996. Proposed Reforms to Affirmative Action in Federal Procurement. 61 FR 26042.

¹⁵ Ibid. See *United States v. Iron Workers Local 86* (1971), *Sims v. Sheet Metal Workers International Association* (1973), and *United States v. International Association of Bridge, Structural and Ornamental Iron Workers* (1971).

¹⁶ National Economic Research Association, Inc. 1992. The Utilization of Minority and Woman-Owned Business Enterprises by Contra Costa County. 185-186.

¹⁷ BPA Economics, Mason Tillman Associates, and Boasberg and Norton. 1990. *MBE-WBE Disparity Study of the City of San Jose*.

¹⁸ Applebaum. 1999. *Construction Workers, U.S.A.*

- While formal training and apprenticeship programs exist within unions, most training of union members takes place informally through social networking. Nepotism characterizes the unionized sector of construction as it does the non-unionized sector, and this favors a white-dominated status quo.¹⁹
- Traditionally white unions have been successful in resisting policies designed to increase black participation in training programs. The political strength of unions in resisting affirmative action in construction has hindered the advancement of blacks in the industry.²⁰
- Discriminatory practices in employee referral procedures, including apportioning work based on seniority, have precluded minority union members from having the same access to construction work as their white counterparts.²¹
- According to testimony from black union members, even when unions implement meritocratic mechanisms of apportioning employment to laborers, white workers are often allowed to circumvent procedures and receive preference for construction jobs.²²

However, these historical observations may not be indicative of current dynamics in construction unions. For example, the 2006 Current Population Survey (CPS) provides current data on union membership indicating higher union membership for African Americans in construction.²³ The CPS asked participants, “Are you a member of a labor union or of an employee association similar to a union?” CPS data show union membership for African Americans in construction to be higher (17 percent) than non-Hispanic whites (14 percent) On the other hand, only 7 percent of Hispanic Americans are union members based on these national data.

It is unclear from past studies whether unions help or hinder equal opportunity in construction today, and whether effects in California are different from other parts of the country. In addition, Hispanic American representation in the national construction industry has seen great advances despite relatively few Hispanics being union members. There are no definitive results from previous research on the role of unions in disparities in African American or Asian-Pacific American employment in construction.

Engineering industry. The study team also examined race and ethnic composition of the engineering industry in California. Two-thirds of people working in the engineering industry in 2000 were non-Hispanic whites, which is greater than non-Hispanic whites’ overall representation across all industries in the state. Asian-Pacific Americans and Subcontinent Asians were also more likely to be employed in the engineering industry than indicated from their representation among all workers in California. These patterns are found in 1980 as well (and for the United States for both 1980 and 2000). Native Americans comprise a small share of engineering industry employees, consistent with Native Americans’ share of all California employment.

¹⁹ Ibid. 299. The high percentage of skilled workers reported having a father or relative in the same trade. However, the author suggests this may not be indicative of current trends.

²⁰ Waldinger and Bailey. 1991. “The Continuing Significance of Race: Racial Conflict and Racial Discrimination in Construction.”

²¹ U.S. Department of Justice. 1996. Proposed Reforms to Affirmative Action in Federal Procurement. 61 FR 26042. See *United Steelworkers of America v. Weber* (1979) and *Taylor v. United States Department of Labor* (1982).

²² Feagin and Imani. 1994. “Racial Barriers to African American Entrepreneurship: An Exploratory Study.”

²³ 2006 Current Population Survey (CPS), U.S. Census Bureau and Bureau of Labor Statistics.

Figure F-6.
Demographics of workers in the engineering and all industries in California and the U.S., 1980 and 2000

California				
	Engineering		All industries	
	1980	2000	1980	2000
	(n = 4,457)	(n = 9,248)	(n = 679,838)	(n = 966,244)
Race/ethnicity				
African American	2.3 % **	3.6 % **	6.6 %	6.5 %
Asian-Pacific American	7.3 **	14.5 **	5.0	11.2
Subcontinent Asian American	0.9 **	1.5 **	0.2	1.1
Hispanic American	7.0 **	11.5 **	16.7	29.0
Native American	0.5 **	1.1	0.9	1.2
Other minority group	<u>0.2</u>	<u>1.0</u>	<u>0.2</u>	<u>0.9</u>
Total minority	18.2 %	33.1 %	29.6 %	49.7 %
Non-Hispanic white	<u>81.8</u> **	<u>66.9</u>	<u>70.4</u>	<u>50.3</u>
Total	100.0 %	100.0 %	100.0 %	100.0 %
Gender				
Female	25.0 % **	28.5 %	45.9 %	46.5 %
Male	<u>75.0</u> **	<u>71.5</u>	<u>54.2</u>	<u>53.5</u>
Total	100.0 %	100.0 %	100.0 %	100.0 %
United States				
	Engineering		All industries	
	1980	2000	1980	2000
	(n = 391,361)	(n = 579,867)	(n = 6,338,776)	(n = 8,295,671)
Race/ethnicity				
African American	3.1 % **	4.3 % **	9.9 %	11.4 %
Asian-Pacific American	2.7 **	4.7 **	1.4	3.4
Subcontinent Asian American	1.0 **	1.3 **	0.2	0.7
Hispanic American	3.5 **	5.7 **	5.6	11.3
Native American	0.4 **	0.8 **	0.6	1.2
Other minority group	<u>0.1</u>	<u>0.4</u>	<u>0.1</u>	<u>0.4</u>
Total minority	10.9 %	17.2 %	17.7 %	28.4 %
Non-Hispanic white	<u>89.2</u> **	<u>82.8</u> **	<u>82.3</u>	<u>71.6</u>
Total	100.0 %	100.0 %	100.0 %	100.0 %
Gender				
Female	23.2 % **	27.1 % **	46.0 %	47.9 %
Male	<u>76.8</u> **	<u>72.9</u> **	<u>54.0</u>	<u>52.1</u>
Total	100.0 %	100.0 %	100.0 %	100.0 %

Note: ** Denotes that the difference in proportions between the construction and all industry groups for the census year is statistically significant at the 95% confidence level.

The engineering industry sector in 2000 is "architectural, engineering and related services," and in 1980 is "engineering, architectural and surveying services." Though closely related, the groups are not exactly comparable.

Source: BBC Research and Consulting from 1980 and 2000 U.S. Census 5% Public Use Micro-sample data. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

As shown in Figure F-6 on the previous page, African Americans and Hispanic Americans had relatively low representation in the engineering industry:

- African Americans made up a relatively small share of engineering industry workers relative to African Americans' share of employment in other industries in 2000 (3.6 percent compared with 6.5 percent). This was also true in 1980.
- Hispanic Americans were 11.5 percent of engineering industry workers in 2000, less than one-half of Hispanics' representation in the overall California workforce (29.0 percent).

In 2000, women represented 28 percent of engineering industry workers, up from 25 percent in 1980.

Employment patterns seen for California's engineering industry are generally consistent with the nation as a whole.

The study team also examined the relative number of minorities and women among civil, environmental and mining and geological engineers in California in 2000. Except for Asian-Pacific Americans, the relative number of engineers by race and ethnicity was consistent with each group's representation among all Californians with college degrees. However, 16 percent of people with college degrees in California in 2000 were Asian-Pacific Americans, and Asian-Pacific Americans were 20 percent of engineers in California.

Finally, about 14 percent of engineers in California are women, far less than women's share of people with college degrees. Figure F-7 presents these results.

Figure F-7.
Demographics of engineers and workers 25 and older
with a college degree in California and the U.S., 2000

California	Engineers (n = 2,482)	Workers 25+ with a college degree (n = 242,421)	United States	Engineers (n = 16,342)	Workers 25+ with a college degree (n = 1,846,629)
Race/ethnicity			Race/ethnicity		
African-American	3.6 % **	4.5 %	African-American	3.9 % **	6.8 %
Asian-Pacific American	19.7 **	16.6	Asian-Pacific American	6.3 **	5.3
Subcontinent Asian American	3.0	2.5	Subcontinent Asian American	2.6 **	1.7
Hispanic American	8.0	8.0	Hispanic	4.3	4.5
Native American	0.8	0.7	Native American	0.7	0.7
Other minority group	0.8	0.9	Other minority group	0.4	0.4
Non-Hispanic white	64.1	66.8	Non-Hispanic white	81.7 **	80.6
Total	100.0 %	100.0 %	Total	100.0 %	100.0 %
Gender			Gender		
Female	13.6 % **	45.9 %	Female	11.8 % **	47.1 %
Male	86.4 **	54.2	Male	88.2 **	52.9
Total	100.0 %	100.0 %	Total	100.0 %	100.0 %

Note: ** Denotes that the difference in proportions between engineers and workers 25+ with a college degree is statistically significant at the 95% confidence level.

Source: BBC Research and Consulting from 2000 U.S. Census 5% Public Use Micro-sample data. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

Advancement in Construction

To research opportunities for advancement in the California transportation construction industry, the study team examined representation of minorities and women in a number of specific occupations related to transportation construction. Relevant construction trades include:

- Cement masons, concrete finishers, segmental pavers and terrazzo workers, who smooth and finish poured concrete surfaces and work with cement to create sidewalks, curbs, roadways or other surfaces;
- Paving, surfacing and tamping equipment operators, who operate equipment used for applying concrete, asphalt, or other materials to road beds, parking lots, or airport runways and taxiways, or equipment used for tamping gravel and dirt;
- Miscellaneous construction equipment operators, who operate motor graders, bulldozers, scrapers, compressors, pumps, derricks, shovels, tractors, or front-end loaders to excavate, move, and grade earth, erect structures, or pour concrete or other hard surface pavement;
- Electricians, who install, connect, test and maintain building electrical systems, which also can include lighting, climate control, security and communications;
- Structural and reinforcing iron and metal workers, who place and install iron or steel girders, columns and other structural members to form completed structures or frameworks of buildings, bridges and other structures; and
- Construction laborers, who perform a wide range of physically demanding tasks at building and highway construction sites, such as tunnel and shaft excavation, hazardous waste removal, environmental remediation and demolition.

The above definitions are from the U.S. Bureau of Labor Statistics.²⁴ The U.S. Bureau of Labor Statistics also describes other trades involved in construction, several of which apply directly to transportation construction:

- Truck drivers;
- Crane and tower operators; and
- Dredge, excavating and loading machine and dragline operators.

Finally, the U.S. Bureau of Labor Statistics analyzes first-line supervisors and managers of construction trades and extraction workers. Management personnel are the most likely of any construction occupation to require a college degree.

BBC compared the race/ethnic/gender composition of people working in low-skill occupations such as laborers with higher-skill construction trades and supervisory ranks.

²⁴ Bureau of Labor Statistics, U.S. Department of Labor. 2001. "Standard Occupational Classification Major Groups." http://www.bls.gov/soc/soc_majo.htm (accessed February 15, 2007).

Race and ethnic composition of construction trades. There are large differences in the racial and ethnic makeup of workers in different trades related to highway construction based on the 2000 U.S. Census of Population. Figure F-8 shows the proportion of occupations for people who work in construction in California for 2000. Overall, 48 percent of the construction workforce were minorities (36.9 percent Hispanic Americans and 10.9 percent other minorities). Minorities comprised a relatively large share of the California construction workforce for:

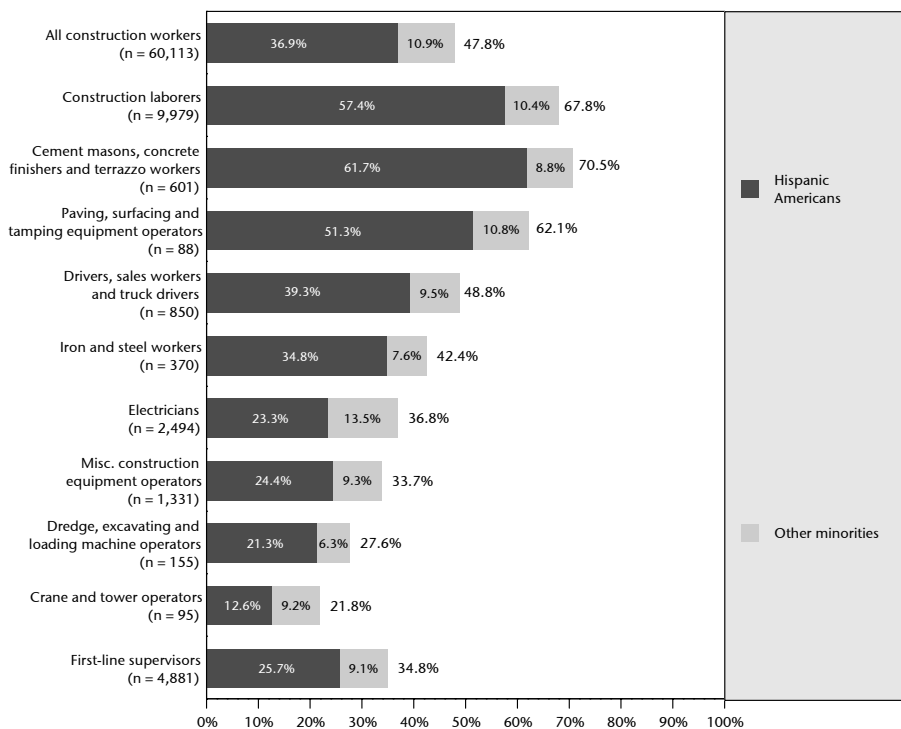
- Construction laborers (68 percent);
- Cement masons, concrete finishers and terrazzo workers (71 percent); and
- Paving, surfacing and tamping equipment operators (62 percent).

A number of occupations had relatively low representation of minorities:

- Crane and tower operators (22 percent);
- Dredge, excavating and loading machine operators (28 percent);
- Miscellaneous construction equipment operators, (34 percent);
- Electricians (37 percent); and
- Iron and steel workers (42 percent).

About 35 percent of first-line supervisors of construction workers were minorities, less than minorities' share of all occupations in construction. Figure F-8 examines these statistics.

Figure F-8.
Minorities as a percentage of construction workers in selected occupations in California, 2000



Source: BBC Research and Consulting from 2000 U.S. Census 5% Public Use Micro-sample data. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

Most of the differences for minorities, overall, reflect differences in Hispanic Americans' representation in these occupations. There were some notable exceptions, however.

African Americans were a relatively large share of construction laborers (5.4 percent) and a relatively small share of first-line supervisors (3.4 percent). These are statistically significant differences from the overall representation of African Americans in the construction industry as a whole (4.3 percent). Even with the higher representation of African Americans in construction laborer jobs, the share of these jobs going to African Americans still falls short of African Americans' representation in the California workforce.

Asian-Pacific Americans were a relatively small share of construction laborers (2.9 percent), cement masons, concrete finishers and terrazzo workers (1.2 percent), truck drivers (2.0 percent), iron and steel workers (2.0 percent), and first-line supervisors (3.0 percent) compared with the share of all construction workers who were Asian-Pacific Americans (4.0 percent). Each difference noted is statistically significant.

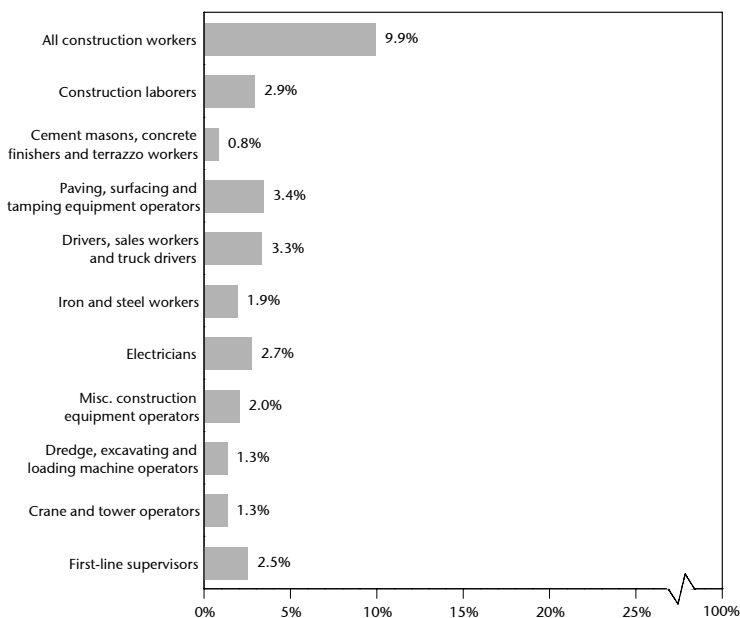
Women in construction trades. About 10 percent of workers in the California construction industry in 2000 were women. In occupations most closely related to the highway construction industry, however, few workers were women. Women also accounted for a slightly smaller share of construction workers in 2000 than in 1980. As shown in Figure F-9 on the following page:

- Among cement masons, concrete finishers and terrazzo workers, fewer than one in 100 workers were women.
- About 1 percent of dredge, excavating and loading machine operators and crane and tower operators were women.
- Two percent of miscellaneous construction equipment operators were women, about the same as women's representation among iron and steel workers.
- Three percent of construction laborers, paving, surfacing and tamping equipment operators, drivers and electricians were women.
- Women were 2.5 percent of first-line supervisors.

Figure F-9.
Women as a percentage
of construction
workers in selected
occupations in
California, 2000

Source:

BBC Research and Consulting from 2000
 U.S. Census 5% Public Use Micro-sample
 data. The raw data extract was obtained
 through the IPUMS program of the MN
 Population Center:
<http://usa.ipums.org/usa/>.



Relative share of minorities and women in construction who are managers. Figures F-8 and F-9 showed the representation of minorities and women among first-line supervisor positions in the California construction industry. The study team also reviewed employment of minorities and women as managers, which is a higher position than first-line supervisor. Construction managers, on average, have more education than first-line supervisors (27 percent have at least a bachelor's degree in California compared with 10 percent of first-line supervisors). Figure F-10 shows the proportion of workers in the construction industry in each group that reported a "manager" occupation.

In 2000, 10 percent of non-Hispanic whites working in the California construction industry were managers. A similar percentage of Subcontinent Asian Americans were managers. Nearly 9 percent of Asian-Pacific Americans were managers (not a substantial difference from the rate for non-Hispanic whites).

In contrast, only 2 percent of Hispanic Americans and 4 percent of African Americans working in construction in 2000 were managers (statistically significant differences from non-Hispanic whites). About 8 percent of Native Americans working in construction were managers.

Fewer women than men working in construction were managers (4.7 percent versus 7.1 percent).

Except for the large number of Native American managers in California, the results described above are consistent with the relative share of construction workers who are managers across the United States.

Figure F-10.
Percentage of construction workers who work as a
manager in California and the U.S., 1980 and 2000

California	1980	2000	United States	1980	2000
Race/ethnicity			Race/ethnicity		
African American	1.3 % **	4.1 % **	African American	1.4 % **	2.9 % **
Asian-Pacific American	4.0 *	8.9 **	Asian-Pacific American	4.2	7.0
Subcontinent Asian American	3.6	9.9	Subcontinent Asian American	5.1	10.3 **
Hispanic American	2.0 **	2.3 **	Hispanic American	1.9 **	2.4 **
Native American	4.6	7.7 **	Native American	2.2 **	4.2 **
Other minority group	6.3	8.3	Other minority group	4.7	5.8 **
Non-Hispanic white	5.6	10.2	Non-Hispanic white	4.6	7.1
Gender			Gender		
Female	6.6 **	4.7 **	Female	5.1 **	3.9 **
Male	4.6	7.1	Male	4.1	6.2
All	4.8 %	6.9 %	All	4.2 %	6.0 %

Note: *, ** Denote that the difference in proportions between the minority and non-Hispanic white groups (or female and male gender groups) is statistically significant at the 90% and 95% confidence levels, respectively.

Source: BBC Research and Consulting from 1980 and 2000 U.S. Census 5% Public Use Micro-sample data. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

Business Ownership

Many studies have explored differences in rates of business ownership between minorities and non-minorities in the United States. Though self-employment rates have increased for minorities and women, studies by Waldinger and Aldrich (1990), Fairlie and Meyer (1996), and Fairlie and Robb (2006) indicate that different opportunities for entrepreneurship exist based on gender, ethnicity and race.²⁵ One study found that the explanatory power of race and ethnicity in self-employment is almost greater in the presence of other factors that also affect self-employment.²⁶

Disparities in the rates of business ownership have been one type of evidence used by courts in finding the Federal DBE Program to be valid. Any disparities in business ownership rates may also be important when considering step 2 adjustments in the annual DBE goal. For example, research developed for the Illinois Department of Transportation considered disparities in business ownership rates as a factor in adjusting the base figure for the IDOT annual DBE goal.²⁷

²⁵ See Waldinger, Roger and Howard E. Aldrich. 1990. *Ethnicity and Entrepreneurship*. Annual Review of Sociology. 111-135.; Fairlie, Robert W. and Bruce D. Meyer. 1996. *Ethnic and Racial Self-Employment Differences and Possible Explanations*. The Journal of Human Resources, Volume 31, Issue 4, 757-793.; Fairlie, Robert W. and Alicia M. Robb. 2006. *Why are Black-Owned Businesses Less Successful than White-Owned Businesses? The Role of Families, Inheritances, and Business Human Capital*. Forthcoming Journal of Labor Economics.; and Fairlie, Robert W. and Alicia M. Robb. 2006. *Race, Families and Business Success: A Comparison of African-American-, Asian-, and White-Owned Businesses*. Russell Sage Foundation.

²⁶ Fairlie, Robert W. and Bruce D. Meyer. 1996. *Ethnic and Racial Self-Employment Differences and Possible Explanations*. The Journal of Human Resources, Volume 31, Issue 4, 757-793.

²⁷ National Economic Research Associates, Inc. 2004. *Disadvantaged Business Enterprise Availability Study*. Prepared for the Illinois Department of Transportation.

California construction industry. The 5% Public Use Micro-sample Data from the U.S. Census of Population can be utilized to study rates of self-employment in California.

Business ownership rates in 2000. Figure F-11 on the following page shows the percentage of different groups working in the construction industry that were self-employed in 2000 and in 1980.

In 2000, 26 percent of non-Hispanic whites working in the construction industry in California were self-employed (in incorporated or unincorporated businesses), about the same as the rate for the United States for that year. The rate of business ownership among Asian-Pacific Americans working in the California construction industry was similar to non-Hispanic whites.

Rates of business ownership among other minority groups working in the construction industry were lower than non-Hispanic whites in 2000:

- African Americans and Hispanic Americans working in the California construction industry owned businesses at one-half the rate of non-Hispanic whites. These differences are statistically significant at the 95 percent confidence level.
- About 15 percent of Subcontinent Asian Americans, working in construction in California, owned their own businesses in 2000. This difference is statistically significant.
- The rate of self-employment for Native Americans working in the construction industry in California, 22 percent, is relatively close to the rate of self-employment for non-Hispanic whites.

In 2000, 15 percent of women working in the California construction industry were self-employed, substantially lower than the rate for men (21 percent). This difference is statistically significant.

In sum, there were statistically significant disparities in the rates of business ownership in 2000 among people working in construction in California for African Americans, Hispanic Americans, Subcontinent Asian Americans and Native Americans compared to non-Hispanic whites. For each of these groups except Native Americans, the differences in self-employment rates compared with non-Hispanic whites were substantial. Women working in construction in 2000 had substantially lower rates of business ownership than men did, and the difference is statistically significant. (Note that only 15 percent of people who owned construction businesses had at least a bachelor's degree.)

The patterns found for business ownership for these race/ethnic and gender groups in the California construction industry in 2000 are similar to those for construction in the United States as a whole. The only notable exception was business ownership rates for Asian-Pacific Americans, which were considerably higher in the California industry than the United States.

Figure F-11.
Percentage of self-employed workers in the
construction industry in California and the U.S., 1980 and 2000

California	1980	2000	United States	1980	2000
Race/ethnicity			Race/ethnicity		
African American	11.7 % **	13.1 % **	African American	9.0 % **	15.7 % **
Asian-Pacific American	14.9 **	25.6	Asian-Pacific American	11.2 **	21.4 **
Subcontinent Asian American	3.6	15.4 **	Subcontinent Asian American	5.9 **	19.6 **
Hispanic American	9.7 **	11.8 **	Hispanic American	10.5 **	12.6 **
Native American	13.9 **	21.6 **	Native American	9.5 **	19.0 **
Other minority group	22.2	25.4	Other minority group	14.8 *	23.7
Non-Hispanic white	21.4	26.0	Non-Hispanic white	19.1	25.2
Gender			Gender		
Female	10.0 **	14.6 **	Female	9.5 **	17.1 **
Male	20.0	20.7	Male	18.5	22.9
All individuals	18.9 %	20.1 %	All individuals	17.7 %	22.3 %

Note: * ** Denote that the difference in proportions between the minority and non-Hispanic white groups (or female and male gender groups) is statistically significant at the 90% and 95% confidence levels, respectively.

Source: BBC Research and Consulting from 1980 and 2000 U.S. Census 5% Public Use Micro-sample data. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

Changes in business ownership rates in California since 1980. In 1980, 21 percent of non-Hispanic whites working in the construction industry in California were self-employed. The rate of self-employment in this group increased from 21 percent to reach 26 percent in 2000. Increases were also found for:

- Asian-Pacific Americans, which showed a more dramatic increase in self-employment in construction since 1980 (15 percent in 1980 and 26 percent in 2000);
- Native Americans, which increased from 14 percent self-employment rate in 1980 to 22 percent in 2000); and
- Subcontinent Asian Americans, which may have increased from 4 percent in 1980 to 15 percent in 2000 (note that statistics for 1980 for Subcontinent Asian Americans are based on only 56 responses in the 1980 Census of Population).

This growth in rates of business ownership is not evident for African Americans and Hispanics:

- Although business ownership rates in construction increased since 1980 for African Americans for the nation as a whole, there was little change in the rate for African Americans working in the California construction industry.
- The rate of business ownership increased among Hispanic Americans working in construction in California by two percentage points, about the same as the United States.

The differences in business ownership rates between men and women working in construction in California narrowed between 1980 and 2000. Although the rate of self-employment increased by only one percentage point for men over this time frame, the rate for women increased by 5 percentage points (still remaining below the rate for men).

California engineering industry. The study team also compared self-employment rates among groups for the California engineering industry.

Business ownership rates in 2000. Among non-Hispanic whites working in the California engineering industry in 2000, 19 percent owned their own businesses. Except for Native Americans, minorities working in the industry in 2000 had substantially lower rates of self-employment:

- Only 10 percent of Hispanics working in the engineering industry in California were self-employed.
- Only 11 percent of Asian-Pacific Americans owned their own engineering businesses.
- About 12 percent of African Americans in the engineering industry owned businesses.
- About 14 percent of Subcontinent Asian Americans owned their own business (not a statistically significant difference due to relatively small sample size for Subcontinent Asians working in engineering in California).

There was little difference in rates of business ownership between Native Americans and non-Hispanic whites in 2000, as shown in Figure F-12. In California, men were about twice as likely as women to be self-employed in the engineering industry.

Except for Native Americans, each minority group had higher rates of business ownership in California than found for the nation. Non-Hispanic whites working in the engineering industry also had a higher rate of self-employment in California.

The study team also examined business ownership rates among civil, environmental and geological engineers in California. Results are not presented here due to relatively small sample sizes. In general, disparities in rates of business ownership mirrored those for the industry as a whole.

Changes in business ownership rates in California since 1980. Business ownership rates in the engineering industry increased since 1980 for African Americans, Native Americans and women.

Figure F-12.
Percentage of self-employed workers in the engineering industry in California and the U.S., 1980 and 2000

California	1980	2000	United States	1980	2000
Race/ethnicity			Race/ethnicity		
African American	7.8 % **	12.2 % **	African American	5.0 % **	6.4 % **
Asian-Pacific American	11.1 **	10.7 **	Asian-Pacific American	8.2 **	8.7 **
Subcontinent Asian American	14.6	13.7	Subcontinent Asian American	6.0 **	6.2 **
Hispanic American	8.7 **	10.0 **	Hispanic American	8.7 **	9.5 **
Native American	9.5	20.3	Native American	9.5	11.6 *
Other minority group	10.0	23.0	Other minority group	7.1	11.8
Non-Hispanic white	20.4	19.1	Non-Hispanic white	15.4	14.7
Gender			Gender		
Female	6.5 **	9.7 **	Female	4.2 **	7.8 **
Male	22.4	19.3	Male	17.6	15.8
All individuals	18.4 %	16.6 %	All individuals	14.5 %	13.6 %

Note: *, ** Denote that the difference in proportions between the minority and non-Hispanic white groups (or female and male gender groups) is statistically significant at the 90% and 95% confidence levels, respectively.

Source: BBC Research and Consulting from 1980 and 2000 U.S. Census 5% Public Use Micro-sample data. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

Potential causes of differences in business ownership rates. Researchers have examined whether there are disparities in business ownership rates after considering factors such as education and age. A number of studies have found that disparities in business ownership still exist in the presence of such factors:

- Several studies have found that access to financial capital is a strong determinant of business ownership. One consistent finding is the positive relationship between startup capital and business formation, expansion and survival.²⁸ One study found that housing appreciation measured at the MSA-level is a positive determinant of entry into self-employment.²⁹ However, unexplained differences still exist when controlling for these factors.³⁰
- Education has positive effects on the probability of business ownership in most industries. However, findings from multiple studies indicate that minorities are still less likely to own a business than their non-minority counterparts with the same levels of education.³¹
- Intergenerational links contribute to the likelihood of self-employment. One study found that experience working for a self-employed family member increases the likelihood of self employment for minority groups.³²
- Studies have found that time since immigration, or assimilation to American Society, are important determinants of self-employment. However, unexplained differences in minority-business ownership still exist when controlling for these factors.³³

Appendix H reports findings from multivariate statistical models that explain business ownership in California's construction and engineering industries as a function of race and gender as well as neutral factors, such as age and education. These analyses draw upon the methods and model specification used in past business ownership research and in previous court-approved disparity studies. The coefficients for this model are reported for construction firm owners in Figure H-2 and for engineering firm owners in Figure H-4.

²⁸ See Lofstrom, Magnus and Chunbei Wang. 2006. *Hispanic Self-Employment: A Dynamic Analysis of Business Ownership*. Working paper, Forschungsinstitut zur Zukunft der Arbeit Institute for the Study of Labor.; and Fairlie, Robert W. and Alicia M. Robb. 2006. *Race, Families and Business Success: A Comparison of African-American-, Asian-, and White-Owned Businesses*. Russell Sage Foundation.

²⁹ Fairlie, Robert W. and Harry A. Krashinsky. 2006. Liquidity Constraints, Household Wealth and Entrepreneurship Revisited.

³⁰ Lofstrom, Magnus and Chunbei Wang. 2006. *Hispanic Self-Employment: A Dynamic Analysis of Business Ownership*. Working paper, Forschungsinstitut zur Zukunft der Arbeit Institute for the Study of Labor.

³¹ See Fairlie, Robert W. and Bruce D. Meyer. 1996. *Ethnic and Racial Self-Employment Differences and Possible Explanations*. The Journal of Human Resources, Volume 31, Issue 4, 757-793; and Butler, John Sibley and Cedric Herring. 1991. *Ethnicity and Entrepreneurship in America: Toward an Explanation of Racial and Ethnic Group Variations in Self-Employment*. Sociological Perspectives. 79-94.

³² See Fairlie, Robert W. and Alicia M. Robb. 2006. *Race, Families and Business Success: A Comparison of African-American-, Asian-, and White-Owned Businesses*. Russell Sage Foundation; and Fairlie, Robert W. and Alicia M. Robb. 2006. Why are Black-Owned Businesses Less Successful than White-Owned Businesses? The Role of Families, Inheritances, and Business Human Capital. Forthcoming Journal of Labor Economics.

³³ See Fairlie, Robert W. and Bruce D. Meyer. 1996. *Ethnic and Racial Self-Employment Differences and Possible Explanations*. The Journal of Human Resources, Volume 31, Issue 4, 757-793; and Butler, John Sibley and Cedric Herring. 1991. *Ethnicity and Entrepreneurship in America: Toward an Explanation of Racial and Ethnic Group Variations in Self-Employment*. Sociological Perspectives. 79-94.

Homeownership and Mortgage Lending

One of the factors researchers examine when studying business formation and success is access to capital. Discrimination in capital markets can prevent minorities and women from acquiring the capital necessary to start or expand a business.³⁴ BBC begins by studying homeownership and mortgage lending, as home equity is an important source of capital to start and expand businesses. The final portion of Section F examines access to business loans.

Homeownership. Wealth created through homeownership can be an important source of capital to start or expand a business. Any barriers to homeownership and home equity growth for minorities or women can affect business opportunities for these groups. Similarly, any barriers to accessing the equity in a home through home mortgages can also affect the capital available for new or expanding businesses. In sum:

- A home is a tangible asset that provides borrowing power;³⁵
- Wealth that accrues from housing equity and tax savings from home ownership contribute to capital formation;³⁶
- Mortgage loans have traditionally been the second largest loan type for small businesses behind lines of credit;³⁷ and
- Homeownership is associated with an estimated 30 percent reduction in predicted probability of loan denial for small businesses.³⁸

Home equity as a source of business capital is especially important in California where past home price appreciation has caused home ownership to be a substantial portion of many households' wealth.³⁹ The study team first considered homeownership rates in California and home prices before turning to data on the home mortgage market.

Homeownership rates. Homeownership is the first step toward building home equity that can be tapped for other purposes. Many studies document past discrimination in the housing markets in the United States. For example, the United States has a history of restrictive real estate covenants and property laws affecting the ownership rights of minorities and women.⁴⁰ In the past, a woman's participation in home ownership was ancillary to that of her husband and parents.⁴¹

³⁴ For an example, see: Coleman, Susan. Small Firm Sources of Debt Capital: A Comparison by Gender, Race and Ethnicity. University of Hartford.

³⁵ Nevin, Allen. 2006. "Homeownership in California: A CBIA Economic Treatise." *California Building Industry Association*. 2.

³⁶ Jackman, Mary R. and Robert W. Jackman 1980. "Racial Inequalities in Home Ownership." *Social Forces*. 58. 1221-1234.

³⁷ Berger, Allen N. and Gregory F. Udell. 1998. "The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle." *Journal of Banking and Finance*. 22.

³⁸ Cavalluzzo, Ken and John Wolken. 2005. "Small Business Loan Turndowns, Personal Wealth and Discrimination." *Journal of Business*. 78:2153-2178.

³⁹ Myers, Dowell and Xin Gao. 2004. "Trajectories of Homeownership in California, 1980 to 2000, and 2000 to 2030." *California Housing Futures research program*. Fannie Mae Foundation.

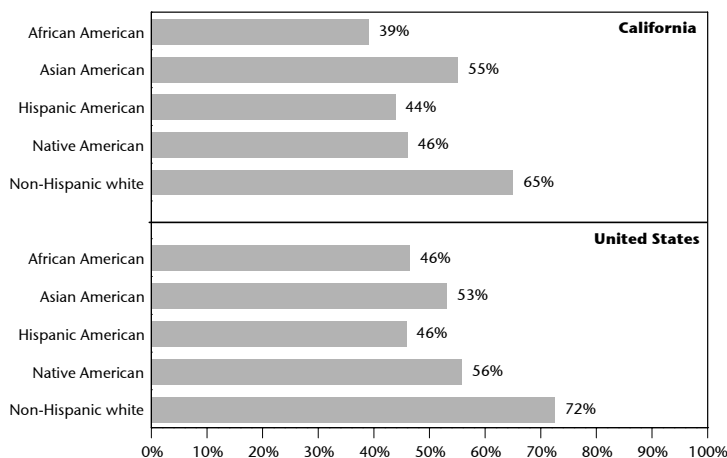
⁴⁰ Ladd, Helen F. 1982. "Equal Credit Opportunity: Women and Mortgage Credit." *The American Economic Review*. 72:166-170.

⁴¹ Card, Emily. 1980. "Women, Housing Access, and Mortgage Credit." *Signs*. 5:215-219.

Figure F-13 presents rates of homeownership for minority groups and non-Hispanic whites in California and the nation in 2000. About 39 percent of African American households were homeowners compared with 65 percent of non-Hispanic whites in the state. Homeownership rates were also particularly low for Hispanic Americans and Native Americans in California. Overall rates of homeownership were lower in California than the nation, in part due to the historically high price of homes in the state.⁴²

Figure F-13.
Homeownership rates, 2000

Source:
U.S. Census Bureau, KnowledgePlex Calculations, an
online resource maintained by the Fannie Mae
Foundation.



BBC also examined homeownership rates for heads of household who worked in the construction industry and engineering industry. Disparities in homeownership rates found for all California households were also identified for households in which the head of household worked in the construction industry. Differences in homeownership rates also persist for African Americans and Hispanic Americans working in the engineering industry.

Different rates of homeownership in part reflect lower incomes for minorities. This may be self-reinforcing, as low wealth puts individuals at a disadvantage in becoming homeowners, which is an effective path to building wealth. One study found statistically significant results indicating that the probability of homeownership is considerably lower for African Americans than it is for comparable non-Hispanic whites throughout the U.S.⁴³ A study in Los Angeles found different results. Controls for types of income indicated that probabilities of homeownership for African American households in South-Central Los Angeles and San Bernardino County were identical to white households.⁴⁴

Home values. Homeownership and the value of the home is a direct indicator of capital available to form or expand businesses. For example, using microdata from matched Current Population Surveys (1993-2004), one study found that differences in housing appreciation between metropolitan areas affected entry into self-employment. The study indicated that a 10 percent annual increase in housing equity increases the mean probability of entrepreneurship by approximately 20 percent.⁴⁵

⁴² Quigley, John M. and Steven Raphael. 2004. "Regulation and the High Cost of Housing in California." *University of California, Berkeley*.

⁴³ Jackman. 1980. "Racial Inequalities in Home Ownership."

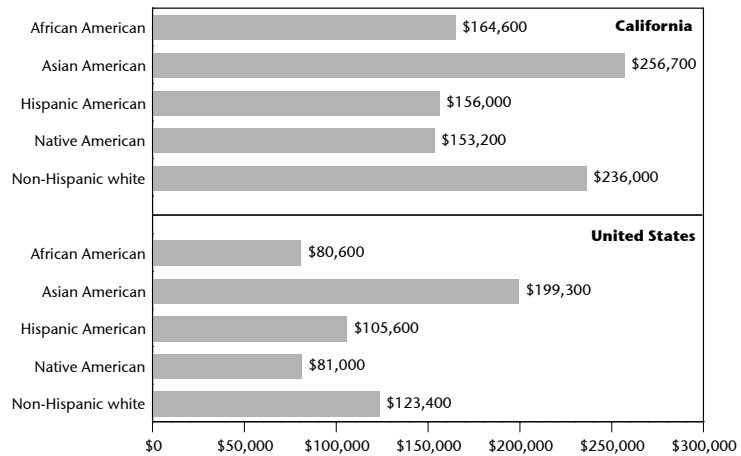
⁴⁴ Gabriel, Stuart and Gary Painter. 2001. "Pathways to Homeownership: An Analysis of the Residential Location and Homeownership Choices of Black Households in Los Angeles." *USC Finance & Business Econ.* Working Paper No. 01-22.

⁴⁵ Fairlie, Robert W. and Harry A. Krashinsky. 2006. "Liquidity Constraints, Household Wealth, and Entrepreneurship Revisited." *IZA Discussion Paper*. No. 2201.

U.S. Bureau of the Census data on home values in 2000 allow comparisons of median home values by race and ethnicity. The median home value of non-Hispanic whites in 2000 was \$236,000 in California, substantially above the median value of homes owned by minorities. (e.g., only \$164,600 for African Americans in California and less for Hispanic Americans and Native Americans). The differences in median home values seen for minorities compared with non-Hispanic whites in California are similar to the differences seen for the United States as a whole.

Figure F-14.
Median home value, 2000

Source:
U.S. Census Bureau, Census 2000 and
BBC Research and Consulting.



Steering by real estate agents. A number of researchers have found that discrimination by real estate agents contributes to residential segregation of minorities.⁴⁶ One such practice is “steering” of prospective homebuyers toward particular neighborhoods and away from others because of their race or ethnicity (a practice that has been prohibited by law for many decades). A recent study found such practices in Los Angeles and other cities throughout the country.

Mortgage lending. Minorities may be denied opportunities to own homes, to purchase more expensive homes or to access equity in their homes if they are discriminated against when applying for home mortgages. BBC explored this issue.

The best source of information concerning mortgage lending discrimination is Home Mortgage Disclosure Act (HMDA) data. HMDA data pertain to information about mortgage loan applications for financial institutions, savings banks, credit unions and some mortgage companies.⁴⁷ The data contain information about the location, dollar amount, and types of loans made, as well as racial and ethnic information, income, and credit characteristics of all loan applicants. The data are available for home purchases, loan refinances, and home improvement loans.

⁴⁶ Galster, George and Erin Godfrey. 2005. “Racial Steering by Real Estate Agents in the U.S. in 2000.” *Journal of the American Planning Association*. 71:251-268.

⁴⁷ Financial institutions are required to report HMDA data if they have assets of more than \$32 million, have a branch office in a metropolitan area, and originated at least one home purchase or refinance loan in the reporting calendar year. Mortgage companies are required to report HMDA if they are for-profit institutions, had home purchase loan originations exceeding 10 percent of all loan obligations in the past year, are located in an Metropolitan Statistical Area (or originated five or more home purchase loans in an MSA) and either had more than \$10 million in assets or made at least 100 home purchase or refinance loans in the calendar year.

The study team’s analysis uses statistics provided by KnowledgePlex on loan denial rates of high-income borrowers. High-income borrowers include households with 120 percent or more of the U.S. Department of Housing and Urban Development (HUD) area median family income.⁴⁸

Conventional loans are loans not insured by a government program. Loan denial rates are calculated as a share of mortgage loan applications that have either been denied or originated (this excludes terminations of the application process by the potential borrower).

Data on loan denial rates for mortgages in California show higher denial rates for minority than for non-Hispanic white high-income households. Figure F-15 reports loan denial rates for the state and for the nation for 2005. Among high-income households applying for mortgages, 28 percent of African American applicants in California had their applications denied compared with 16 percent of non-Hispanic white households. Loan denial rates were also higher for Native Americans, Hispanic Americans and Asian Americans compared with non-Hispanic whites.

The patterns of loan denial rates by race and ethnicity in California mirror those of the United States as a whole for 2005, although California loan denial rates were higher than national rates for both minorities and non-minorities.

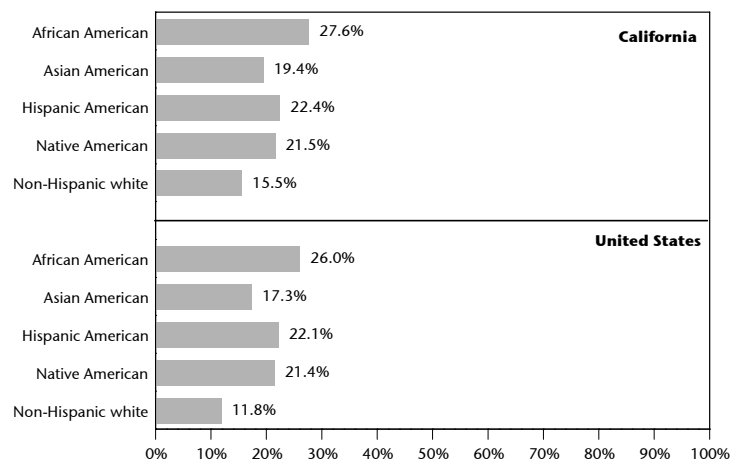
Figure F-15.
Denial rates of conventional purchase loans to high-income households, 2005

Note:

High-income borrowers include households with 120% or more than the HUD area median family income (MFI).

Source:

FFIEC HMDA data 2005 and KnowledgePlex, an online resource maintained by the Fannie Mae Foundation.



A number of national studies have examined disparities in loan denial rates and loan amounts for minorities in the presence of other influences. Examples include the following:

- The Boston Fed Study is one of the most famous studies of mortgage lending discrimination.⁴⁹ It was conducted using the most comprehensive set of credit characteristics ever assembled for a study on mortgage discrimination.⁵⁰ The study provided persuasive evidence that lenders in the Boston area discriminated against minorities in 1990.⁵¹

⁴⁸ 2005 median family income is \$58,000 for the United States and \$62,500 for California. Based on 2000 census data on family incomes. Data are updated to 2005 using Census P-60 median family income data, Census American Community Survey data on changes in state median family incomes and local Bureau of Labor Statistics Wage data.

⁴⁹ Munnell, Alicia H., Geoffrey Tootell, Lynn Browne and James McEneaney. 1996. "Mortgage Lending in Boston: Interpreting HMDA Data." *The American Economic Review*. 86: 25-53.

⁵⁰ Ladd, Helen F. 1998. "Evidence on Discrimination in Mortgage Lending." *The Journal of Economic Perspectives*. 12:41-62.

⁵¹ Yinger, John. 1995. *Closed Doors, Opportunities Lost: The Continuing Costs of Housing Discrimination*. New York: Russell Sage Foundation, 71.

- Using the Federal Reserve Board's 1983 Survey of Consumer Finances and the 1980 Census of Population and Housing data, logit statistical analysis revealed that minority households were one-third as likely to receive conventional loans as non-Hispanic white households after taking into account financial and demographic controls.⁵²
- Findings from a Midwest study indicate a significant relationship between race and both the number and amount of mortgage loans. Data matched on socioeconomic characteristics revealed that African American borrowers across 13 census tracts received significantly less of both compared to their white counterparts.⁵³

On the other hand, other studies have found that differences in preferences for FHA versus conventional loans among racial and ethnic groups may partly explain disparities found in conventional loan approvals between minorities and non-minorities.⁵⁴ Several studies have found that minority borrowers are far more likely to receive FHA loans than comparable non-Hispanic white borrowers at all income and wealth levels. FHA loans are insured by the government thus protecting the lender, but the borrower can be hurt by higher costs.⁵⁵

Relevant studies are more limited in California.

- Home Mortgage Disclosure Act (HMDA) data revealed disparities in prime and subprime lending for African American, Hispanic American and Native American applicants. Differences extended across all Metropolitan Statistical Areas.⁵⁶
- An older study using HMDA data and a stepwise regression model accounting for socioeconomic status revealed that measures of ethnicity contribute little explanation to mortgage lending in Sacramento.⁵⁷
- A recent paired testing approach revealed adverse treatment of African Americans and Hispanics in Los Angeles. In some cases, the overall pattern of treatment observed did not differ statistically from equal treatment. Multivariate analysis found almost no evidence of systemic variation in the treatment of African American testers in Los Angeles other than encouragement for FHA loans.⁵⁸

Higher fees and interest rates. Denial of loans is only one way that minorities could be discriminated against in the home mortgage market; mortgage-lending discrimination can also reveal itself through high fees and interest rates. The housing market provides a unique atmosphere for this type of discrimination through fees associated with various loan types.

⁵² Canner, Glenn B., Stuart A. Gabriel and J. Michael Woolley. 1991. "Race, Default Risk and Mortgage Lending: A Study of the FHA and Conventional Loan Markets." *Southern Economic Journal*. 58:249-262.

⁵³ Leahy, Peter J. 1985. "Are Racial Factors Important for the Allocation of Mortgage Money?: A Quasi-Experimental Approach to an Aspect of Discrimination." *American Journal of Economics and Sociology*. 44:185-196.

⁵⁴ Canner. 1991. "Race, Default Risk and Mortgage Lending: A Study of the FHA and Conventional Loan Markets."

⁵⁵ Yinger. 1995. *Closed Doors, Opportunities Lost: The Continuing Costs of Housing Discrimination*. 80.

⁵⁶ Gee, Peter. 2004. *The Price of Credit: Prime and Subprime Lending in California 2004*. The Greenlining Institute.

⁵⁷ Dingemans, Dennis. 1979. "Redlining and Mortgage Lending in Sacramento." *Annals of the Association of American Geographers*. 69:225-239.

⁵⁸ Ross, Stephen, Margery Austin Turner, Erin Godfrey and Robin R. Smith. 2005. "Mortgage Lending in Chicago and Los Angeles: A Paired Testing Study of the Pre-Application Process." *University of Connecticut Department of Economics Working Paper Series*.

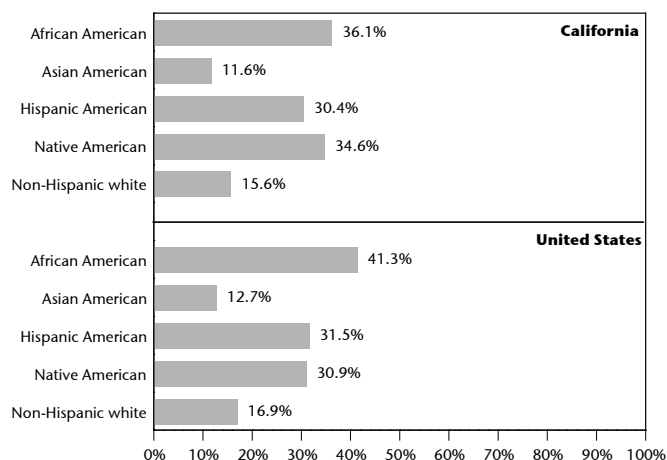
One of the fastest growing segments of the home mortgage industry is subprime lending. From 1994 through 2003, subprime mortgage activity grew by 25 percent per year and accounted for \$330 billion of U.S. mortgages in 2003, up from \$35 billion a decade earlier. Subprime loans are marketed and sold to customers with blemished or limited credit histories that would typically not qualify for prime loans.

Minorities are more likely to receive a subprime loan, which charge higher interest fees than conventional loans. Financial institutions have been accused of taking advantage of minorities by charging unnecessarily high rates and imposing costs that endanger home ownership. One study found many users of the subprime market are qualified for prime loans.⁵⁹

In California, African American, Native American and Hispanic American borrowers are much more likely to have a subprime loan than non-Hispanic whites. For example, 36 percent of the conventional refinancing loans received by African Americans were from subprime lenders compared with only 16 percent of refinancing loans received by non-Hispanic whites. On the other hand, Asian Americans are less likely than non-Hispanic whites to obtain a mortgage from the subprime market.

Figure F-16.
Percent of conventional refinancing loans from subprime lenders, 2004

Source:
FFIEC HMDA data 2004 and KnowledgePlex, an online resource maintained by the Fannie Mae Foundation.



Historically, differences in types of loans awarded to minorities have been attributed to steering by real estate agents, who serve as an information filter between buyers and sellers.⁶⁰ Some studies claim that real estate brokers provide different levels of assistance and different information on loans to minorities and non-minorities.⁶¹ This “steering” can shape the perceived availability of loans to minority borrowers.

Home value appraisal is another means of discrimination in mortgage lending. Differences in appraisal values can change the loan-to-value ratio, an indicator of risk for lending institutions. Findings suggest that minorities and women have been subject to the under-appraisal of home values.

⁵⁹ Freddie Mac. 1996, September. “Automated Underwriting: Making Mortgage Lending Simpler and Fairer for America's Families.” *Freddie Mac*. (accessed February 5, 2007).

⁶⁰ Kantor, Amy C. and John D. Nystuen. 1982. “De Facto Redlining a Geographic View.” *Economic Geography*. 4:309-328.

⁶¹ Yinger. 1995. *Closed Doors, Opportunities Lost: The Continuing Costs of Housing Discrimination*. 78–79.

One study suggests that appraisers lower appraisal values for minorities.⁶² Another study found that minorities have higher loan-to-value ratios.⁶³

Other potential forms of discrimination by lenders are more difficult to analyze and document.⁶⁴ Areas include outreach and application procedures (i.e. helping non-minority applications look stronger), loan terms determined by the lender (interest rates, maturity, loan-to-value ratio and loan types), underwriting standards that may disproportionately affect minorities and women, and default and foreclosure options.

Anecdotal evidence suggests that African American home seekers generally must expend more time, effort and resources than non-Hispanic whites for the same end.⁶⁵ Minorities and women may also believe they are required to produce greater levels of equity and hard collateral in order to secure debt than their non-minority male counterparts and have fewer options for investment capital.⁶⁶

Redlining. Redlining is the term for mortgage lending discrimination to geographic areas associated with high lender risk. These areas are often racially determined, such as African American and mixed race neighborhoods.⁶⁷ This practice can perpetuate problems in already poor neighborhoods.⁶⁸

For example, the City of East Palo Alto sued a California lender for redlining and having loan practices that discriminated against people in low income or minority communities. Evidence included loan officers telling applicants that the bank simply did not lend in East Palo Alto or in specific minority neighborhoods.⁶⁹ The bank provided cash and a revolving loan fund in order to settle the lawsuit.

Most quantitative studies have failed to find strong evidence in support of geographic dimensions of lender decisions. Studies in Columbus, Ohio; Boston, Massachusetts; and Houston, Texas found that the racial differences in loan denial had little to do with racial composition of the neighborhood, but rather the individual characteristics of the borrower.⁷⁰ Some studies found race of the applicant to be a factor in loan denials, not the racial makeup of the neighborhood.

⁶² Yinger. 1995. *Closed Doors, Opportunities Lost: The Continuing Costs of Housing Discrimination*. 82.

⁶³ Tootell, Geoffrey M. B. 1996. "Redlining in Boston: Do Mortgage Lenders Discriminate Against Neighborhoods?" *The Quarterly Journal of Economics*. 111:1049-1079.

⁶⁴ Yinger. 1995. *Closed Doors, Opportunities Lost: The Continuing Costs of Housing Discrimination*. 78-81.

⁶⁵ Bullard, Robert D. 1990. "Housing Barriers: Trends in the Nation's Fourth-Largest City." *Journal of Black Studies*. 21:4-14.

⁶⁶ Darryl E. Greene & Associates, P.C., and Triaxial Management Services, Inc., a Joint Venture. 1994. *DBE/MBE/WBE Predicate Study: Preliminary*. Los Angeles County Metropolitan Transportation Authority.

⁶⁷ Holloway, Steven R. 1998. "Exploring the Neighborhood Contingency of Race Discrimination in Mortgage Lending in Columbus, Ohio." *Annals of the Association of American Geographers*. 88:252-276.

⁶⁸ Ladd, Helen F. 1998. "Evidence on Discrimination in Mortgage Lending." *The Journal of Economic Perspectives*. 12:41-62.

⁶⁹ "California bank pays \$206,000 and establishes \$7 million credit line for city to settle redlining suit." *National Fair Housing Advocate Online*. http://www.fairhousing.com/index.cfm?method=page.display&pagename=advocate_october02_page5 (accessed February 8, 2007).

⁷⁰ See Holloway. 1998. "Exploring the Neighborhood Contingency of Race Discrimination in Mortgage Lending in Columbus, Ohio."; Tootell. 1996. "Redlining in Boston: Do Mortgage Lenders Discriminate Against Neighborhoods?"; and Holmes, Andrew and Paul Horvitz. 1994. "Mortgage Redlining: Race, Risk, and Demand." *The Journal of Finance*. 49:81-99.

Studies of redlining have primarily focused on the geographic aspect of lender decisions; however, redlining can also include the practice of restricting credit flows to minority neighborhoods through procedures that are not observable in actual loan decisions. Examples include branch placement, advertising and other pre-application procedures.⁷¹ These practices can deter minorities from starting businesses. Locations of financial institutions are important to small business start up because local banking sectors often finance local business.⁷² Redlining practices would deny this capital resource to minorities.

Gender discrimination in mortgage lending. Relatively little information is available on sex-based discrimination in mortgage lending markets. Historically, lending practices overtly discriminated against women by requiring information on marital and childbearing status. Risk associated with women of childbearing age and unmarried women resulted in “income discounting,” limiting the availability of loans to women.⁷³

The Equal Credit Opportunity Act (ECOA) in 1973 suspended these discriminatory lending practices. A study in California explored discrimination against married and single women in 16 metropolitan areas from 1977 to 1978. Regression analysis revealed little evidence of sex discrimination in California. Barriers have continued after 1973, however. For example, there is some evidence that lenders under-appraise property for female borrowers.⁷⁴

Access to Business Capital

Barriers to capital markets can have significant outcomes for small business formation and expansion. “Discrimination in obtaining loans due to race and gender,” was identified as an issue for businesses during Caltrans public hearings held in spring 2006.⁷⁵ In addition, several studies have found evidence that start-up capital is important for business profits, longevity and other outcomes.⁷⁶

- The amount of start-up capital is positively associated with small business sales and other outcomes.⁷⁷
- Limited access to capital has limited the size of African American-owned businesses.⁷⁸
- Weak financial capital was identified as a significant reason that more African American-owned firms than non-Hispanic white-owned firms closed over a four-year period.⁷⁹

⁷¹ Yinger, John. 1995. “Closed Doors, Opportunities Lost: The Continuing Costs of Housing Discrimination.” Russell Sage Foundation. New York. 78-79.

⁷² Holloway. 1998. “Exploring the Neighborhood Contingency of Race Discrimination in Mortgage Lending in Columbus, Ohio.”

⁷³ Card. 1980. “Women, Housing Access, and Mortgage Credit.”

⁷⁴ Ladd, Helen F. 1982. “Equal Credit Opportunity: Women and Mortgage Credit.” *The American Economic Review*. 72:166-170.

⁷⁵ Caltrans Public Hearing Testimony and Related Documents. Examined and summarized by GCAP Services.

⁷⁶ For examples see Fairlie. 2006. “Liquidity Constraints, Household Wealth, and Entrepreneurship Revisited,” and Grown, Caren and Timothy Bates. 1991. “Commercial Bank Lending Practices and the Development of Black-Owned Construction Companies.” Center for Economic Studies, U.S. Bureau of the Census.

⁷⁷ See Fairlie, Robert W. and Harry A. Krashinsky. 2006. “Liquidity Constraints, Household Wealth, and Entrepreneurship Revisited”; and Grown. 1991. “Commercial Bank Lending Practices and the Development of Black-Owned Construction Companies.”

⁷⁸ Grown. 1991. “Commercial Bank Lending Practices and the Development of Black-Owned Construction Companies.”

Bank loans are one of the largest sources of debt capital for small businesses.⁸⁰ Discrimination in the application and approval processes of these loans and other credit resources could be detrimental to the success of minority- and women-owned businesses.

Previous studies have addressed race, ethnic and gender discrimination in capital markets by evaluating:

- Loan denial rates;
- Loan values;
- Interest rates;
- Individual assumptions that loan applications will be rejected;
- Sources of capital; and
- The relationship between start-up capital and business survival.

To examine these questions, the study team analyzed data from the Federal Reserve Board's 1998 Survey of Small Business Finances (SSBF) conducted by the Board of Governors. It is the most comprehensive national source of credit characteristics of firms with fewer than 500 employees. Sample weights are applied to provide representative estimates.⁸¹ The survey contains information on loan denial and interest rates, as well as anecdotal information from firms. The sample contains records for 3,521 firms nationally.

The SSBF records the geographic location of the firm by census division, not city or state. The Pacific Census Division contains California.⁸²

Loan denial rates. Figure F-17 on the following page shows loan denial rates from the 1998 SSBF for the Pacific region. In the Pacific, 32.5 percent of minority-owned firms reported loan denial. Non-minority owned firms reported a lower rate.

The BBC study team was unable to report robust statistics on individual minority groups due to limited sample sizes. However, analysis of the Pacific region from the 1998 SSBF revealed patterns consistent with national results:

- African American-owned businesses experienced higher rates of denial than all other groups in the Pacific region;
- Hispanic American-owned firms had a loan denial rate considerably above Hispanic whites; and
- Asian American-owned firms had relatively high rates of loan denial.

⁷⁹ Grown. 1991. "Commercial Bank Lending Practices and the Development of Black-Owned Construction Companies."

⁸⁰ Data from the 1998 SSBF indicates that 70 percent of loans to small business are from commercial banks. This result is present across all gender, race and ethnic groups with the exception of African Americans, whose rate of lending from commercial banks is even greater than other minorities. See Blanchard, Lloyd, Bo Zhao and John Yinger. 2005. "Do Credit Market Barriers Exist for Minority and Woman Entrepreneurs." *Center for Policy Research, Syracuse University*.

⁸¹ Ethnicity and race were analyzed using the following methodology: A non-Hispanic white firm is a firm that is not Hispanic and not minority; an African American firm is black/African American and not Hispanic; Hispanic American is all firms that identify as Hispanic; and Asian-Pacific American is either Asian, Native American or Native Hawaiian and not Hispanic. Firms that claimed "sometimes approved/sometimes denied" were given half weights to the loan denial rate. Weighted rates and means were computed. The sample size is unweighted.

⁸² The Pacific Census Division includes Alaska, California, Hawaii, Oregon and Washington.

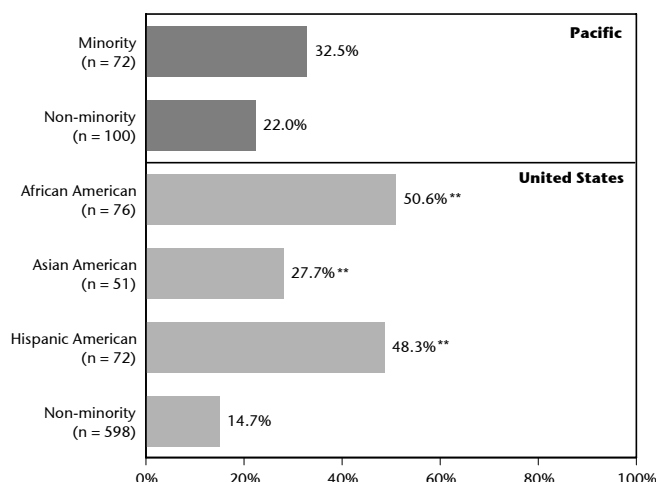
Figure F-17.
Business loan denial rates, 1998

Note:

** Denotes that the difference in proportions from non-minority is statistically significant at the 95% confidence level.

Source:

BBC Research and Consulting from 1998 Survey of Small Business Finances.



A number of studies have developed regression models to isolate the effects of race and ethnicity from other factors that affect loan approvals. Findings from these studies include:

- Commercial banks are less likely to loan to African American-owned firms than to non-Hispanic white-owned firms, after controlling for other factors.⁸³
- African American, Hispanic American and Asian American men are more likely to be denied for a loan than non-Hispanic white men. However, African American borrowers are more likely to apply for a loan.⁸⁴
- There are substantial unexplained differences in credit applications, loan denials and interest rates between non-Hispanic white- and African American-owned firms. Competitiveness of lender markets helps to explain these disparities.⁸⁵
- The probability of loan denial decreases with greater personal wealth. However, controlling for personal wealth does not resolve the large differences in denial rates across African American-, Hispanic American-, Asian American-, and non-Hispanic white-owned firms. Specifically, information on personal wealth explained some differences for Hispanic- and Asian American-owned firms compared to non-Hispanic whites, but almost none for African Americans.⁸⁶
- Loan denial rates are significantly higher for African American-owned firms than non-Hispanic white-owned firms in the presence of several other factors such as creditworthiness and other characteristics. This result is largely insensitive to econometric specification. Consistent evidence on loan denial rates and other indicators of discrimination in credit markets was not found for other minorities and women.⁸⁷

⁸³ Cavalluzzo, Ken, Linda Cavalluzzo and John Wolken. 2000. "Competition, Small Business Financing and Discrimination: Evidence from a New Survey." *FEDS Working Paper No. 99-25*

⁸⁴ Coleman, Susan. 2002. "Characteristics and Borrowing Behavior of Small, Women-owned Firms: Evidence from the 1998 National Survey of Small Business Finances." *The Journal of Business and Entrepreneurship*. 151-166.

⁸⁵ See Cavalluzzo, 2000. "Competition, Small Business Financing and Discrimination: Evidence from a New Survey."

⁸⁶ Cavalluzzo, Ken and John Wolken. 2002. "Small Business Turndowns, Personal Wealth and Discrimination." *FEDS Working Paper No. 2002-35*.

⁸⁷ Blanchflower, David G., Phillip B. Levine and David J. Zimmerman. 2003. "Discrimination in the Small Business Credit Market." *The Review of Economics and Statistics*. 85:930-943.

Using data from the 1998 NSSBF and controlling for other variables, previous studies demonstrated that women are no less likely to apply for or to be approved for loans.⁸⁸ In its own analyses, reported in Appendix H, the study team explored the relationships between loan denial and race/gender of firm ownership. These relationships were explored using multivariate statistical models that appropriately controlled for a wide variety of neutral factors that explain the likelihood of a firm's loan denial, including the credit and financial help of the owner and of the business and contextual characteristics of the lending environment. Results of this analysis are presented in Figure H-11.

Loan values. Beyond loan denial rates, the study team considered the loan values for firms receiving loans. Results from the 1998 NSSBF for the most recent loan values awarded by ethnicity, race and gender are given in Figure F-18.

In the Pacific, the average loan amount for non-Hispanic whites was \$205,712. Minority-owned firms had lower loan amounts:

- Minority-owned firms received loan amounts that averaged less than half of the loan amounts awarded to non-Hispanic white-owned firms.
- A similar trend exists for minority-owned firms on a national level, but the difference is much smaller than in the Pacific region.

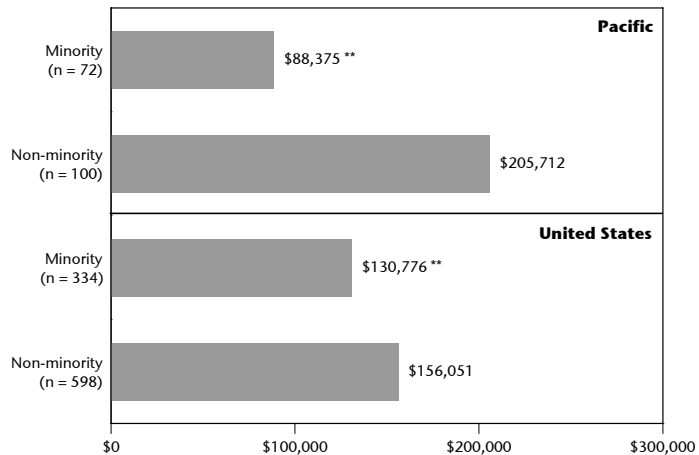
The differences for minority firms reflected lower loan amounts requested.

Figure F-18.
Mean value of approved business loans, 1998

Note:

** Denotes that the difference in means from non-minority is statistically significant at the 95% confidence level.

Source:
BBC Research and Consulting from 1998 Survey of Small Business Finances.



Previous national studies have found that African American-owned firms receive substantially lower loan amounts than their non-Hispanic white counterparts with similar characteristics. Examination of construction companies in the United States revealed that African American-owned firms received smaller loans than firms with otherwise identical traits. This increases the likelihood of firm closure.⁸⁹

⁸⁸ Coleman. 2002. "Characteristics and Borrowing Behavior of Small, Women-owned Firms: Evidence from the 1998 National Survey of Small Business Finances."

⁸⁹ Grown. 1991. "Commercial Bank Lending Practices and the Development of Black-Owned Construction Companies."

Interest rates. Figure F-19 presents average interest rates on commercial loans from the 1998 SSBF. The mean interest rates for African American-owned firms, Asian-Pacific American-owned firms and Hispanic-owned firms in the Pacific region are similar to the mean interest rate for non-Hispanic whites of 9.7 percent.

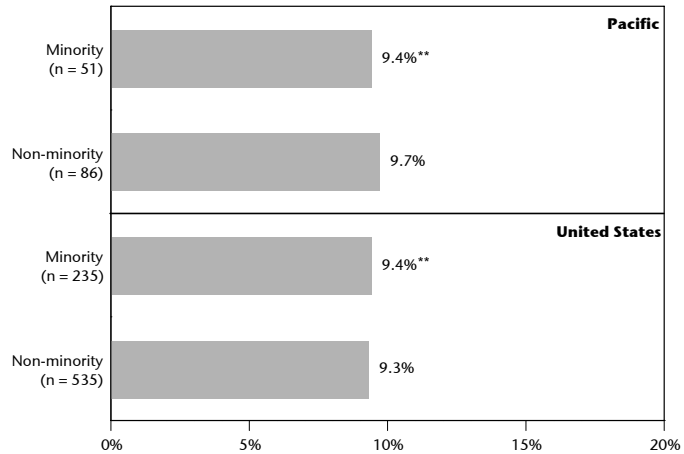
Figure F-19.
Mean interest rate for business loans, 1998

Note:

** Denotes that the difference in mean from non-minority is statistically significant at the 95% confidence level.

Source:

BBC Research and Consulting from 1998 Survey of Small Business Finances.



The results above are similar to some studies of interest rates charged for commercial loans that controlled for factors such as individual credit history, firm credit history, and Dun and Bradstreet credit scores.⁹⁰ Differences were found in some studies:

- Hispanic-owned firms had significantly higher interest rates in places with less credit market competition.⁹¹
- Among a sample of firms with no past credit problems, African American-owned firms paid significantly higher interest rates on approved loans.⁹²

Individual assumptions that loan applications will be rejected. Fear of loan denial is a barrier to capital markets because it prevents small businesses from applying for loans and thus can help explain differences in business outcomes. In addition, it provides insight into minority business owners' perceptions of the small business lending market. Figure F-20 shows results from the 1998 SSBF on firms that reported needing credit but did not apply because they feared denial. Minority-owned firms were more likely to avoid applying for loans due to fear of denial than non-minority owned firms.

The BBC study team was unable to report robust statistics on individual minority groups in the Pacific region due to limited sample sizes. However, results for African American- and Hispanic American-owned firms were similar to national results.

⁹⁰ Cavalluzzo. 2000. "Competition, Small Business Financing and Discrimination: Evidence from a New Survey."

⁹¹ Cavalluzzo. 2000. "Competition, Small Business Financing and Discrimination: Evidence from a New Survey."

⁹² Blanchflower. 2003. "Discrimination in the Small Business Credit Market."

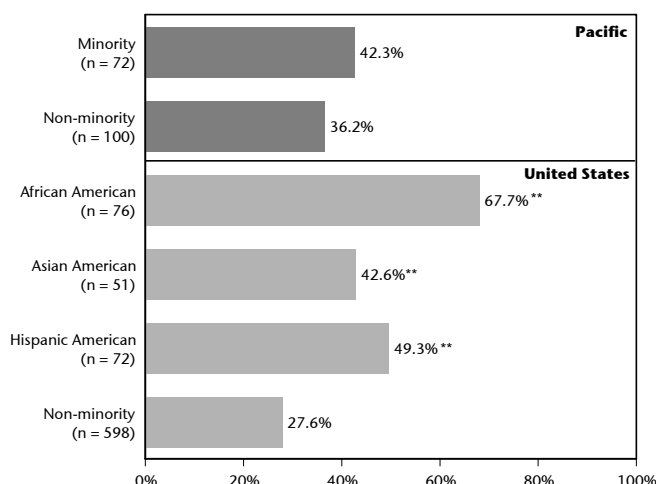
Figure F-20.
Firms that needed loans but did not
apply due to fear of denial, 1998

Note:

** Denotes that the difference in proportions from non-minority is statistically significant at the 95% confidence level.

Source:

BBC Research and Consulting from 1998 Survey of Small Business Finances.



The body of literature identifies multiple factors that influence the decision to apply for a loan, such as firm size, firm age, owner age and educational attainment. Controlling for these factors can help to determine whether race and ethnicity explain fear of loan denial. Findings indicate:

- African American- and Hispanic American-owners are significantly less likely to apply for loans.⁹³
- After controlling for educational attainment, there were no significant differences in loan application rates between non-Hispanic white, African American, Hispanic and Asian American men.⁹⁴
- African American-owned firms are more likely than other firms to report being seriously concerned with credit markets and are less likely to apply for credit in fear of denial.⁹⁵

Comments concerning access to capital from firms interviewed in the 2006

Availability Survey. Near the conclusion of the interviews with business owners and managers in the transportation construction and engineering industry, the 2006 Availability Survey included the following open-ended question:

Finally, we are giving business owners and managers an opportunity to offer general insights on your industry, including how difficult it is to start or expand your business and to [bid / propose] on and win work. As you are thinking, be sure to consider any issues related to Caltrans and local government projects in California. What thoughts do you have to offer on these topics?

⁹³ Cavalluzzo, 2000. "Competition, Small Business Financing and Discrimination: Evidence from a New Survey."

⁹⁴ Coleman, Susan. 2004. "Access to Debt Capital for Small Women- and Minority-Owned Firms: Does Educational Attainment Have an Impact?" *Journal of Developmental Entrepreneurship*. 9:127-144.

⁹⁵ Blanchflower et al., 2003. Discrimination in the Small Business Credit Market.

The questions asked were open-ended by design, which affects the number of comments concerning each potential barrier. If the study team had specifically asked about each potential barrier, more firms would have identified the issue as a barrier for their firm. The strength of this methodology is that respondents identified areas of problems unprompted by the interviewers. It shows the degree to which certain barriers were “top of mind” for business owners and managers. BBC coded multiple responses.⁹⁶

Some transportation construction firms mentioned access to capital as a difficulty in starting or expanding their businesses or in working with Caltrans. Unprompted, about 1 percent of firms brought up this issue. Four percent of African American-owned firms responding to the survey mentioned access to capital as a barrier, a greater rate than other firms.

Very few transportation engineering firms identified access to capital as a barrier in the 2006 Availability Survey.

Other factors affecting capital markets. Strength in the ethnic banking sector influences credit accessibility in ethnic communities in Los Angeles. A strong Asian American bank sector helped Asian American communities transition to successful business environments, and a lack of strong banking sectors in African American communities could hinder development of African American businesses.⁹⁷

Bonding

Although little quantitative information exists regarding MBEs and WBEs and access to surety bonds for public construction projects, there is anecdotal evidence that suggests such problems persist.⁹⁸ For example, in spring 2006 Caltrans public hearings, one concern among minority, women and small business owners was high insurance and bonding requirements.⁹⁹

Access to bonding and bonding requirements were brought up by a few transportation construction or engineering industry firms when discussing barriers to entry and business success in the 2006 Availability Survey. Somewhat more African American-owned firms interviewed mentioned bonding as a barrier than other firms. Most comments related to bonding were focused on general difficulties in obtaining bonds, particularly for small businesses. Some firms specifically cited Caltrans’ bonding requirements as a barrier to obtaining work. For example, one respondent stated, “Caltrans’ requirements are pretty stringent in regards to bonding.” Another said, “I think Caltrans is looking for big projects from big firms. We are a small firm and can do the job but bonding is the biggest issue.”

⁹⁶ For example, if a firm owner responded to the first question by indicating that slow payment and contract specifications were barriers, BBC tracked both responses. If the firm owner answered the second question with further elaboration on slow payment, and then added a comment about difficulty finding information about contract opportunities, the information on bidding comment was added to the combined responses for that firm.

⁹⁷ Dymski, Gary and Lisa Mohanty. 1999. “Credit and Banking Structure: Asian and African-American Experience in Los Angeles.” *The American Economic Review*. 89:362-366.

⁹⁸ Enchautegui, Maria E. et al. 1997. “Do Minority-Owned Businesses Get a Fair Share of Government Contracts?” *The Urban Institute*: 1-117, p. 56.

⁹⁹ Caltrans Public Hearing Testimony and Related Documents. Examined and summarized by GCAP Services.

Summary of Entry into the Industry

BBC's analysis suggests that barriers to entry into the transportation construction and engineering industry may begin with education and training and continue through forming a business and gaining access to capital. Initial results include:

- College education appears to be a barrier for African Americans, Hispanic Americans and Native Americans. Disparities in educational attainment for African Americans and Hispanic Americans appear at the high school level, which may affect college opportunities. These factors may affect entrance of African Americans, Hispanic Americans and Native Americans into the engineering industry.
- There is low representation of women among civil, environmental and geological engineers.
- African Americans, Asian-Pacific Americans, Hispanic Americans and women working in the engineering industry are less likely to be business owners than others in the industry.
- Representation of African Americans in the construction industry is relatively low compared to other industries in the California, even among entry-level jobs. The representation of women in construction as a whole is relatively low, and very few women are in the construction trades involved in transportation construction.
- There appear to be disparities in the advancement of Hispanics to certain construction occupations and first-line supervisor positions. Relatively few African Americans, Hispanic Americans and women working in construction are managers.
- African Americans, Hispanic Americans, Subcontinent Asian Americans and women in construction are less likely than non-Hispanic whites to own construction businesses.

There is evidence that minority-owned firms face disadvantages in accessing capital necessary to start and expand businesses:

- Relatively fewer African Americans, Hispanic Americans and Native Americans in California own homes than non-Hispanic whites, and those who do own homes tend to have lower home values. Home equity is an important source of capital for business start-up and growth.
- African Americans, Asian Americans, Hispanic Americans and Native Americans applying for home mortgages are more likely than non-minorities to have their applications denied.
- African American, Hispanic American and Native American mortgage borrowers are more likely to have subprime loans.
- African American-, Asian American- and Hispanic American-owned businesses have higher denial rates when applying for business loans, and when they receive loans, have lower loan amounts.
- Relatively more African American- and Hispanic American-owned firms that need credit do not apply for loans because they fear being denied the loan.

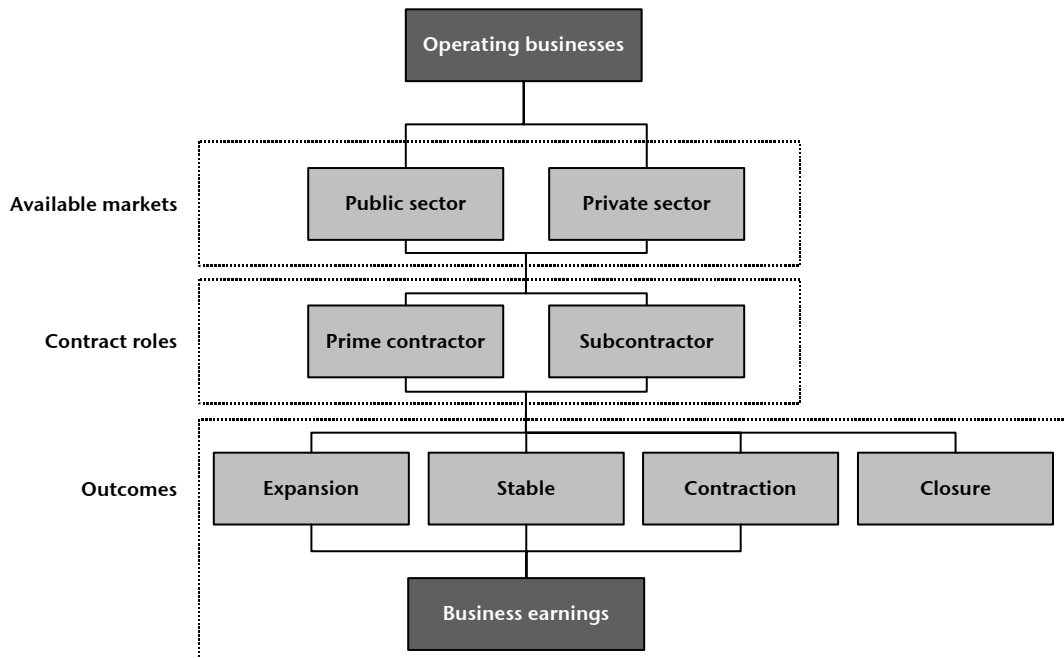
Relative Success of MBE/WBEs

BBC also examined the relative success of MBEs and WBEs once they are operating. The study team examined whether business opportunities and markets for minority- and women-owned transportation construction and engineering firms differ from majority-owned firms. The study team then researched outcomes for MBEs, WBEs and majority-owned businesses, including:

- Businesses discontinuing operations;
- Businesses expanding or contracting;
- Business earnings; and
- Size distribution of gross revenue.

This analysis examines whether some of the patterns found by Congress concerning disparities in outcomes for minority- and women-owned businesses are found in California. Figure F-21 provides a framework for the analysis. BBC begins this section by examining federal data sources on California businesses. The section concludes by analyzing differences in market opportunities and success for MBE/WBEs from the 2006 Availability Survey.

Figure F-21.
Business success



Source: BBC Research and Consulting.

Businesses Discontinuing Operations

The relative number of business failures among minority firms in California has been cited as an indicator of unfavorable business conditions that face minority business owners in the state.

Rates of business closures in California. In 2006, the Discrimination Research Center released a report analyzing the effects of Proposition 209 on DBE survival and utilization. Voter passage of Proposition 209 was one of the factors that led to elimination of race- or gender-conscious project goals for Caltrans' state-funded contracts as well as local agencies' contracts that were not subject to the Federal DBE Program. The Discrimination Research Center report argues that Proposition 209 led to a sharp decrease in the utilization of DBE firms and in the DBE share of overall contract dollars, resulting in the closure of many of these firms.¹⁰⁰

The study tracked DBEs that had done business with Caltrans in 1996 to assess the net effect of Proposition 209.

- Of the 3,269 construction firms registered as DBEs with Caltrans in 1996, 1,005 remained in operation in 2006, a survival rate of 32 percent.
- The survival rate among African American-owned construction firms registered with Caltrans in 1996 was the lowest of all groups at 27 percent.

However, the implications of these statistics are unclear. The report points out that it does not provide a comparable statistic for the number of non-DBE firms that have closed, so one cannot determine whether DBEs were more likely to close than other firms.

BBC further explored possible data sources that might indicate whether MBEs were more likely to close than other firms. Using data from the 1997 Survey of Minority- and Women-Owned Business Enterprises (SMOBE) provided by the U.S. Census Bureau, the U.S. Small Business Administration reports information regarding employer firm survival rates of minority-owned businesses between 1997 and 2001 across sectors of the economy ("employer firms" are firms with paid employees beyond the business owner and family members). These data identify patterns for each state.

Figure F-22 on the following page shows that 34 percent of African American-owned firms in California in 1997 had closed by 2001, a rate higher than other groups. These findings are consistent with the Discrimination Research Center study of DBEs in California. Firms owned by Native Americans may have lower rates of closure than other firms in California. Rates for Hispanic American- and Asian American-owned firms in California are similar to all firms. The patterns for California are consistent with the United States as a whole for each group of firms except for those owned by Native Americans.

¹⁰⁰ Discrimination Research Center. 2006. Free to Compete?: Measuring the Impact of Proposition 209 on Minority Business Enterprises. Berkeley: 20-21.

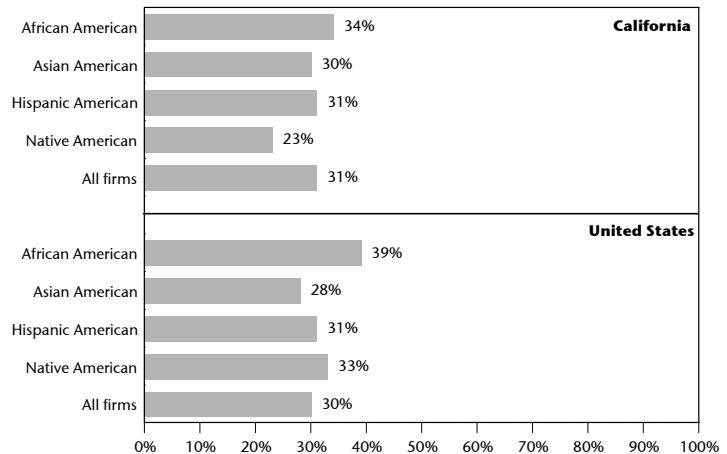
Figure F-22.
Rates of firm closure 1997-2001, California and the U.S.

Note:

Data refers only to employer firms. Sample sizes not reported, but statistics are consistent with SBA data quality guidelines.

Source:

U.S. Census Bureau and Lowrey, Ying. U.S. Small Business Administration Office of Advocacy. "Dynamics of Minority-Owned Employer Establishments, 1997-2001." Washington D.C.



Rates of business closures for construction firms. The data shown in Figure F-23 compare national rates of closure for construction firms to national rates of closure for all firms. The higher closure rate for African American-owned firms was also true when only examining construction firms. Closure rates also appeared to be higher for construction firms owned by Native Americans and for Asian Americans. (No statistics were available from this data source for engineering firms.)

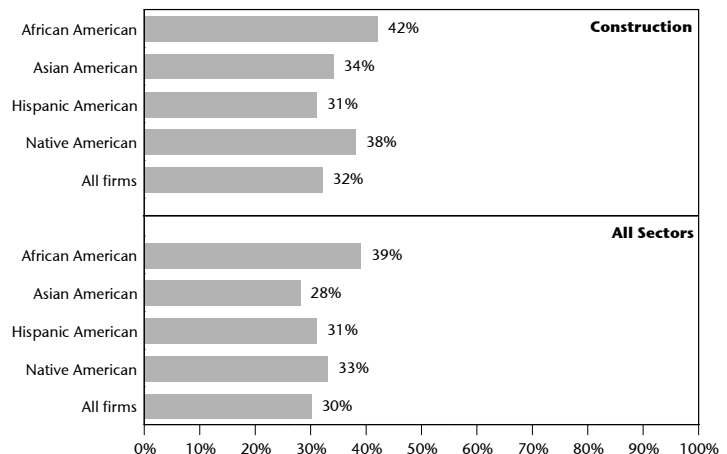
Figure F-23.
Rates of firm closure 1997-2001, construction and all industries in the U.S.

Note:

Data refers only to employer firms. Sample sizes not reported, but statistics are consistent with SBA data quality guidelines.

Source:

U.S. Census Bureau and Lowrey, Ying. U.S. Small Business Administration Office of Advocacy. "Dynamics of Minority-Owned Employer Establishments, 1997-2001." Washington D.C.



Successful versus unsuccessful closures. Not all firm closures can be interpreted as a “failure” of the business. Reasons that a firm may close “successfully” include owner retirement or the emergence of a more profitable business alternative.

To date, the 1992 Characteristics of Business Owners Survey (CBO) is the only dataset released by the Census Bureau that classifies firm closures into successful and unsuccessful subsets.¹⁰¹ The CBO survey asked owners of businesses that had closed since 1992 the question “Which item below describes the status of this business at the time the decision was made to cease operations?” Only the responses “successful” and “unsuccessful” were permitted. A firm reported to be unsuccessful at time

¹⁰¹ CBO data from the 1997 and 2002 Economic Censuses do not include statistics on successful and unsuccessful closure. To date, the 1992 CBO is the only U.S. Census dataset that does.

of closure is understood to be a firm failure. Figure F-24 shows comparative data for the proportion of firms closing between 1992 and 1996 that failed.¹⁰²

According to the CBO, closed African American-owned construction firms were the most likely to report “unsuccessful” when asked about the status of the business when it closed. About 82 percent of the African Americans who had owned and closed construction firms reported an unsuccessful business (77 percent for all African American business owners who had closed businesses). Only 58 percent of non-minority men who had owned construction businesses said that their business was unsuccessful at time of closing, a substantial disparity. The differences in status of a construction firm at closing were also large between other minorities (Asian Americans and Native Americans) and non-minority men.

Differences in the successful versus unsuccessful closing of construction firms were only somewhat narrower for other groups:

- About 71 percent of Hispanic Americans who had owned and closed construction businesses reported the business to be unsuccessful at time of closing, a substantial difference from the results for non-minority men.
- About 66 percent of women who had owned and closed construction firms reported the business to be unsuccessful, compared to 58 percent for non-minority men.

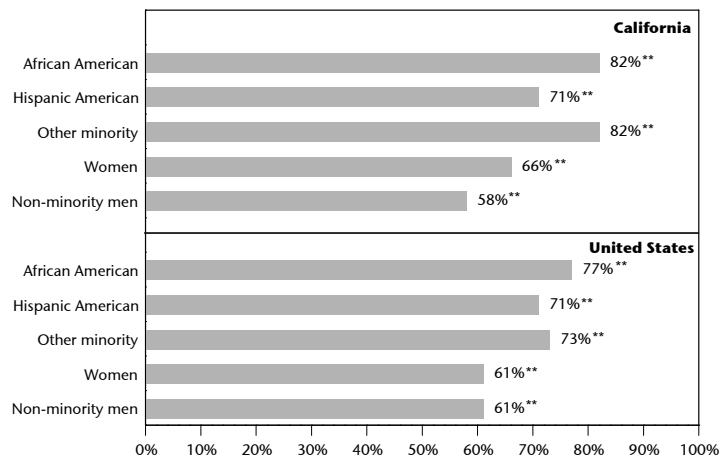
Figure F-24.
Comparative “failure” rates
of closed firms 1992-1996,
construction and all industries
in the U.S.

Note:

** denotes that the difference between the indicated proportion and the corresponding proportion for all firms was significant at the 95% confidence level.

Source:

U.S. Census Bureau, 1996 Characteristics of Business Owners Survey (CBO).



Results are similar when comparing successful versus unsuccessful status of closed firms for all sectors combined. Although this analysis is national in scope, these preliminary results suggest that higher overall closure rates for minority-owned firms in California may indicate higher rates of actual business failure.

¹⁰² All CBO data should be interpreted with caution due to the fact that firms that did not respond to the survey cannot be assumed to have the same characteristics of ones that did. This report does not include CBO data on firm closure because firms not responding to the survey were found to be much more likely to have closed than ones that did. Holmes, Thomas J. and James Schmitz. 1996. “Nonresponse Bias and Business Turnover Rates: The Case of the Characteristics of Business Owners Survey.” *Journal of Business & Economic Statistics*. 14(2): 231-241.

This study includes CBO data on firm success because there is no compelling reason to believe that closed firms responding to the survey would have reported different rates of success/failure than those closed firms that did not respond to the survey. Headd, Brian. U.S. Small Business Administration, Office of Advocacy. 2000. *Business Success: Factors leading to surviving and closing successfully*. Washington D.C.: 12.

Reasons for differences in failure rates. Several researchers have offered explanations for higher rates of successful closure among non-DBE firms and higher rates of failure among DBE firms:

- Minority business failure is largely due to barriers in access to capital. A regression analysis identifies initial capitalization as the most significant factor in determining firm viability. Because African American-owned businesses secure smaller amounts of debt equity in the form of loans, they are more inclined to fail. Difficulty in accessing capital is found to be particularly acute for minority firms in the construction industry.¹⁰³
- Prior work experience in a family member's business and prior work experience in a similar business are found to be strong determinants of business viability. Because African American business owners are much less likely to have family business experience and/or similar business experience, their firms are less likely to survive.¹⁰⁴
- Level of education is found to be a strong determinant in business survival. It explains a significant portion of the gap in firm closure rates between African Americans and non-minority firms.¹⁰⁵
- Non-minority business owners have the opportunity to pursue a much wider array of business activities, which increases their likelihood of closing successful businesses to pursue more profitable business alternatives. Minority business owners, especially those who do not speak English, have greatly limited employment options and are less likely to close a successful business.¹⁰⁶
- Their possession of greater initial capital and the generally higher levels of education of Asian Americans determine the high rate of survival of Asian American-owned firms compared to other minority-owned firms.¹⁰⁷

Summary. Available data suggest that closure rates for African American-owned firms in California are higher than other firms. Based on national results for the construction industry, and Discrimination Research Center statistics on differential rates of DBE closures, African American-owned construction firms in California are likely to have had higher rates of closure than other construction firms in California. National data indicate that African Americans who owned and closed construction firms are much more likely to have done so because the firm was unsuccessful. Reasons why business failure rates are higher for African American-owned construction firms have been analyzed at the national level.

¹⁰³ Bates, Timothy and Caren Grown. 1991. "Commercial Lending Practices and the Development of Black-Owned Construction Companies." Center for Economic Studies, U.S. Census Bureau.

¹⁰⁴ Robb, A. and Fairlie, R. 2005. "Why are Black-Owned Businesses Less Successful than White-Owned Businesses? The Role of Families, Inheritances, and Business Human Capital." University of California, Santa Cruz.

¹⁰⁵ Ibid. 24.

¹⁰⁶ Bates, Timothy. 2002. "Analysis of Young Small Firms That Have Closed: Delineating Successful from Unsuccessful Closures." Center for Economic Studies, U.S. Census Bureau.

¹⁰⁷ Bates, Timothy. 1993. "Determinants of Survival and Profitability Among Asian Immigrant-Owned Small Businesses." Center for Economic Studies, U.S. Census Bureau.

Comparative Rates of Expansion and Contraction

Comparative rates of expansion and contraction of MBE and non-MBE firms are also a useful indicator of the relative success of minority-owned businesses.

Expansion. The U.S. Small Business Administration's 2005 study of minority business dynamics from 1997-2001 also examines rates of expansion and contraction for minority-owned firms in California that had paid employees at the starting time period for the analysis ("employer firms").

Figure F-25 compares the percentage of firms that increased their total employment between 1997 and 2001. About one-third of all firms expanded according to the SBA study. However, only 26 percent of African American-owned firms expanded over this period. Relatively more Hispanic American-owned firms expanded over this period compared with all firms in California. The percentage of Native American-owned firms in California that expanded was considerably above the percentage for all firms. The likelihood of expansion was about the same for California Asian American-owned firms as all California firms.

Results for African American-, Asian American- and Hispanic American-owned firms in California are consistent with what was found for the United States for 1997 to 2001.

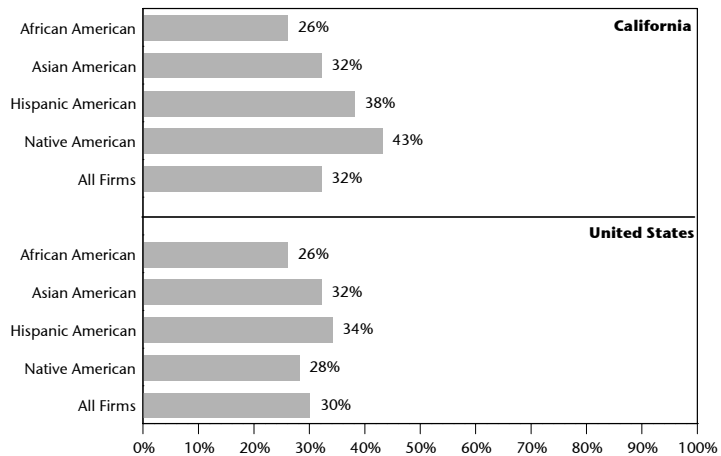
Figure F-25.
Percentage of firms that
expanded employment 1997-
2001, California and the U.S.

Note:

Data refers only to employer firms. Sample sizes not reported, but statistics are consistent with SBA data quality guidelines.

Source:

U.S. Census Bureau 1997 Survey of Minority- and Women-Owned Business Enterprises (SMOBE) and U.S. Small Business Administration.



The results above are for all firms, not just construction firms. The U.S. Small Business Administration does not report expansion rates for construction firms in California, only for construction firms in the nation.

Figure F-26 examines the percentage of construction firms that expanded and the share of all firms that expanded for the United States. The construction industry showed differences in expansion rates for all groups. As with all firms for the nation, African American-owned construction firms were less likely to have expanded between 1997 and 2001 than all construction firms. Rates of expansion for construction were similar to rates for all industries for each group except for Hispanic American firms, which showed higher rates of expansion in the construction industry. This suggests that differences in overall rates of expansion between minority-owned firms and all firms in California may also be true for the California construction industry.

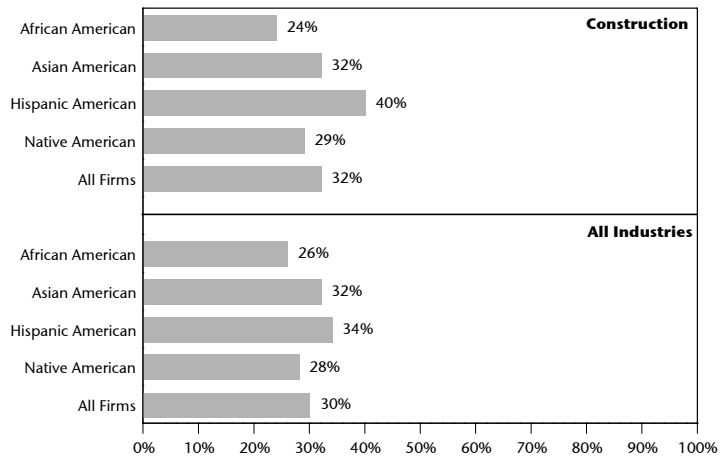
Figure F-26.
Percentage of firms that expanded employment 1997-2001, construction and all industries in the U.S.

Note:

Data refers only to employer firms. Sample sizes not reported, but statistics are consistent with SBA data quality guidelines.

Source:

U.S. Census Bureau 1997 Survey of Minority- and Women-Owned Business Enterprises (SMOBE) and U.S. Small Business Administration.



Contraction. Figure F-27 examines the percentage of firms that reduced their employment between 1997 and 2001. As with the analysis of expanding firms, these data track activity of employer firms beginning in 1997. For each minority group, minority-owned firms were no more likely to have contracted than all firms, in both California and the United States. African American- and Hispanic American-owned firms were less likely to have contracted than all firms, both in California and in the nation.

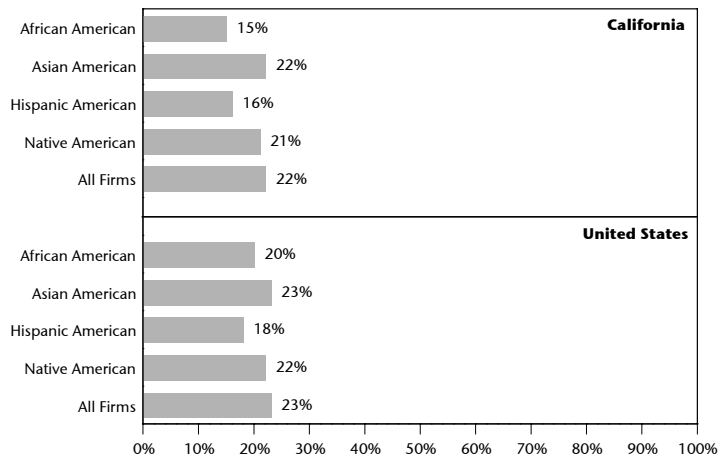
Figure F-27.
Percentage of firms that contracted employment 1997-2001, California and the U.S.

Note:

Data refers only to employer firms. Sample sizes not reported, but statistics are consistent with SBA data quality guidelines.

Source:

U.S. Census Bureau 1997 Survey of Minority- and Women-Owned Business Enterprises (SMOBE) and U.S. Small Business Administration.



The above results pertain to all firms in California. As with expansion, the SBA study did not report results for the California construction industry. However, minority-owned construction firms were no more likely to have contracted than were all construction firms across the nation. Asian-Pacific American- and Hispanic American-owned construction firms had lower rates of contraction than all construction firms in the United States. Figure F-28 shows these results.

Exhibit F-28.

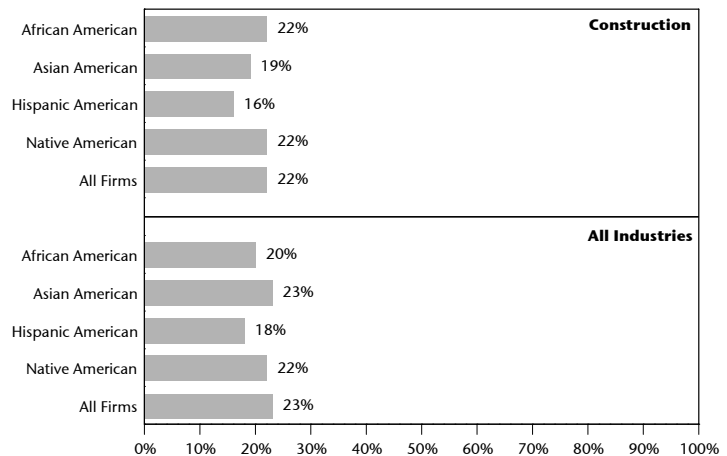
Percentage of firms that contracted employment 1997-2001, construction firms and all industries in the U.S.

Note:

Data refers only to employer firms. Sample sizes not reported, but statistics are consistent with SBA data quality guidelines.

Source:

U.S. Census Bureau 1997 Survey of Minority- and Women-Owned Business Enterprises (SMOBE) and U.S. Small Business Administration.



Summary. Between 1997 and 2001, the SBA study found that 32 percent of California employer firms had expanded employment, 22 percent had contracted employment and 31 percent had closed (discussed previously in this Appendix).

- African American-owned firms were less likely to expand or contract (and more likely to close than other firms).
- The relative number of Asian American-owned firms was about as likely to expand or contract as all firms in California.
- Native American-owned firms were far more likely to expand and less likely to contract than all firms in the state.
- Hispanic American-owned firms were more likely to expand and less likely to contract than all firms in the state.

Other than African American-owned firms, minority-owned employer firms fared as well or better than all firms in California by these measures of business performance.

Business Earnings

Academics and policymakers have argued that self-employment is an effective means for disadvantaged workers to escape discrimination in the marketplace and advance economically.¹⁰⁸ For a preliminary examination of the relative business success of self-employed minorities and women in the construction and engineering industries, the BBC study team evaluated earnings from the 2000 U.S. Census 5% Public Use Micro-Samples (PUMS data). The sample contains incorporated and unincorporated business owners between ages 16 and 64 that reported positive business earnings.

¹⁰⁸ Fairlie, Robert. 2001. "Earnings Growth Among Disadvantaged Business Owner." *Final Report to the Office of Advocacy, U.S. Small Business Administration*.

Figure F-29 presents earnings for business owners in the construction industry. In California, African American- and Hispanic American business owners have substantially lower earnings than non-Hispanic white business owners. Disparities are particularly large for African American and Hispanic American business owners who earn 30 percent less than non-Hispanic white business owners. On average, female construction business owners earn about one-half of the earnings of majority-owned firm owners. Average owner earnings in the construction industry in California are generally higher than national averages, but show similar trends across gender, race and ethnicity.

Figure F-29.
Mean annual
business owner
earnings,
construction
industry, 1999

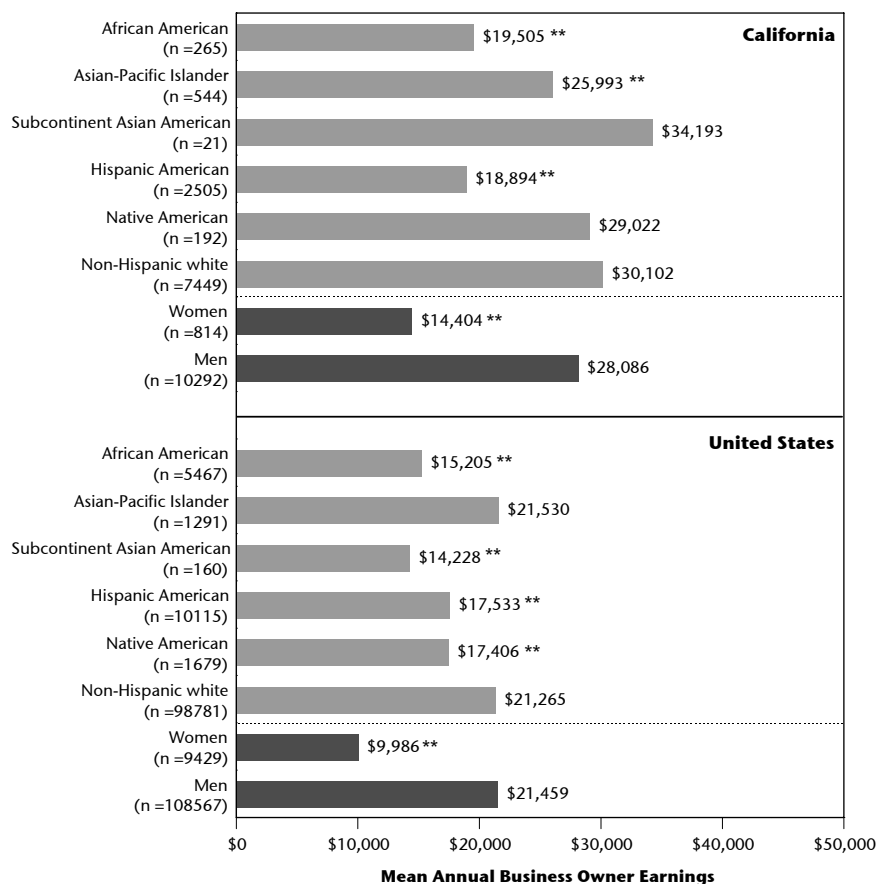
Note:

Universe is business owners between ages 16 and 64 that reported positive earnings.

** Statistically significant at the 95% confidence level.

Source:

BBC Research and Consulting from 2000 U.S. Census 5% Public Use Micro-sample data.



Sample sizes for the California engineering industry are much smaller than construction. Therefore, the study team grouped all minorities and compared average owner earnings to non-Hispanic white owners of engineering firms. Figure F-30 on the following page shows that average minority business owners earnings exceed non-Hispanic white business owner earnings in both California and the United States. These preliminary results largely reflect the higher earnings of Asian American business owners, which comprise a large share of all minority-owned engineering firms in the California portion of the sample.

Appendix H contains the results of multivariate statistical models that explored that the study team conducted to explore whether the disparities in business earnings reported here remained for members of certain minority groups and woman after controlling for neutral explanatory factors, such as the owner's age and education level. These results are reported in Figures H-6, H-7 and H-9 of the corresponding appendix.

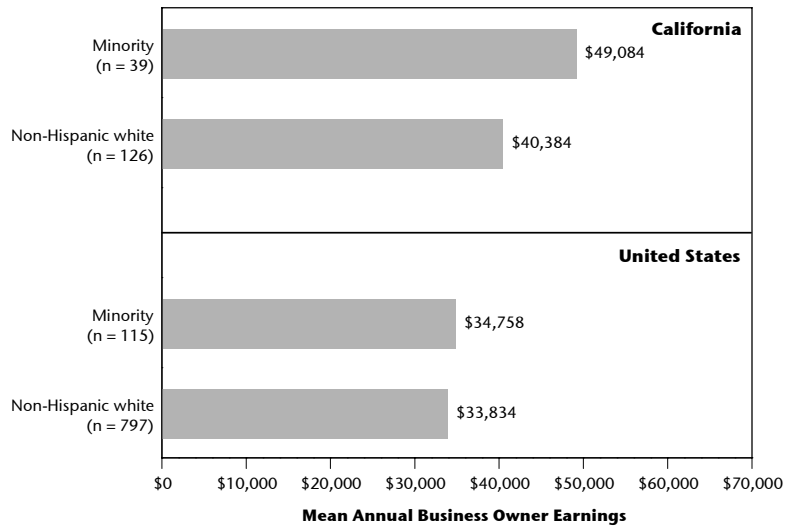
Figure F-30.
Mean annual business
owner earnings,
engineering
industry, 1999

Note:

Universe is business owners between ages 16 and 64 that reported positive earnings.

Source:

BBC Research and Consulting from 2000 U.S. Census 5% Public Use Micro-sample data.



Results for Transportation Construction and Engineering Industry

The study team's Availability Survey provides information on firm revenue, size of contracts and past bidding success.

Gross revenue of transportation construction and engineering firms. Firms responding to the 2006 Availability Survey were asked to identify the size range for their gross revenue in 2005. A second question asked for gross revenue across all California locations for multi-location firms. (The Availability Survey only includes firms working in the transportation construction and engineering industry that report qualifications and interest in working with Caltrans or local governments in the future.) Preliminary results for gross revenue for the single location or across all locations in California are examined here.

Figure F-31 examines the distribution of MBEs, WBEs and majority-owned transportation construction industry firms by revenue class. For example, 70 percent of minority-owned construction industry firms reported gross revenue of less than \$1 million.

Relatively more MBEs than WBEs had revenues less than \$1 million — 57 percent of white women-owned firms reported gross revenue of less than \$1 million for 2005. Only 51 percent of majority-owned construction firms had revenues of less than \$1 million.

Figure F-31 demonstrates that relatively few minority- and women-owned firms in the transportation construction industry reach annual revenue of more than \$5 million per year. Twenty percent of majority-owned firms reach this revenue threshold compared with 8 percent of MBEs and 11 percent of WBEs in the transportation construction industry.

Figure F-31.
Distribution of firms
by gross revenue
net size class in 2005,
transportation
construction industry

Note:

WBE is white women-owned firms.

* Statistically significant at the 90% confidence level.

** Statistically significant at the 95% confidence level.

Source:

BBC Research and Consulting from 2006 Availability Survey.

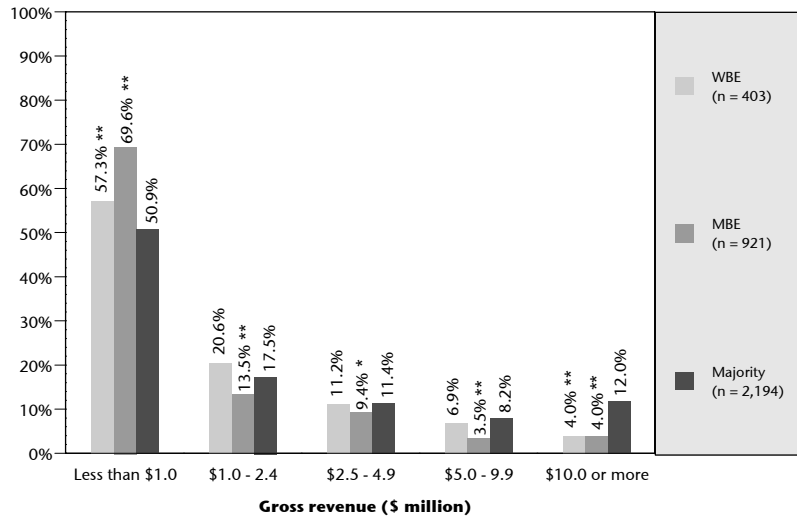


Figure F-32 provides greater detail on transportation construction industry firms that report gross revenue of \$5 million or more in 2005. About 11 percent of WBEs and Asian-Pacific American-owned firms reached this revenue level, more than other MBE groups but still short of the proportion of majority-owned firms. Only 4 percent of African American- and Subcontinent Asian American-owned transportation construction industry firms reached this revenue level.

Figure F-32.
Percentage of
transportation
construction industry
firms with \$5 million
or more gross revenues
for all California
locations in 2005

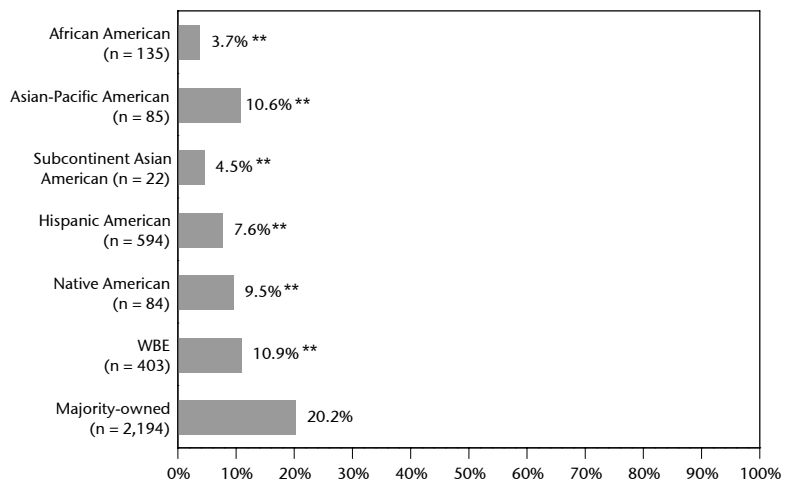
Note:

WBE is white women-owned firms.

** Statistically significant at the 95% confidence level.

Source:

BBC Research and Consulting from 2006 Availability Survey.



Transportation engineering industry firms interviewed in the Availability Survey were also asked to identify gross revenue across all California locations in 2005. Findings are similar to those for transportation construction industry firms (see Figure F-33):

- MBEs and WBEs were disproportionately represented in the lowest revenue size classes.
- About 14 percent of majority-owned firms reported gross revenue of \$5 million or more for 2005, a larger proportion than found for MBEs (7 percent) and WBEs (5 percent).

Figure F-33.
Gross revenue of
company for all
California locations
in 2005, transportation
engineering industry

Note:

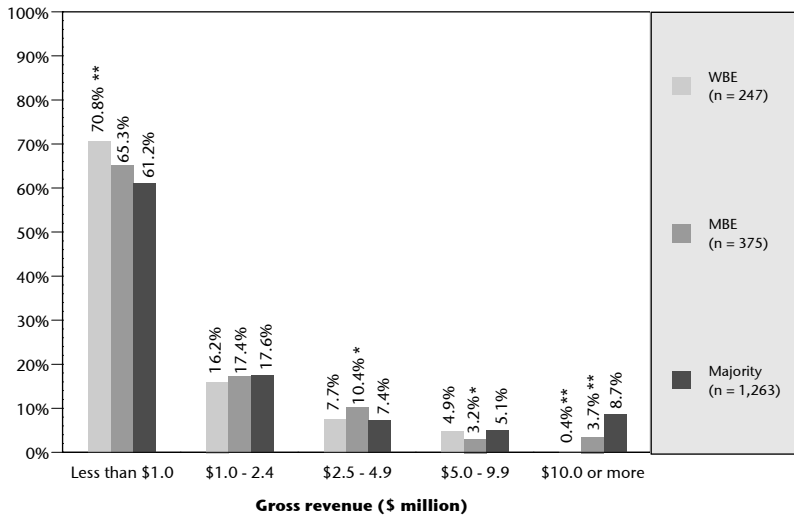
WBE is white women-owned firms.

* Statistically significant at the 90% confidence level.

** Statistically significant at the 95% confidence level.

Source:

BBC Research and Consulting from 2006 Availability Survey.



As with transportation construction industry firms, the study team analyzed the proportion of engineering-related firms by minority group that reached \$5 million in annual revenue. Except for Hispanic American-owned firms in the transportation engineering industry, only about 5 percent of MBEs and WBEs had revenue of \$5 million or more in 2005 (compared with 14 percent for majority-owned firms). About 11 percent of Hispanic American-owned firms reported this level of revenue (see Figure F-34).

Figure F-34.
Percentage of
transportation
engineering industry
firms with \$5 million or
more in gross revenues
for all California
locations in 2005

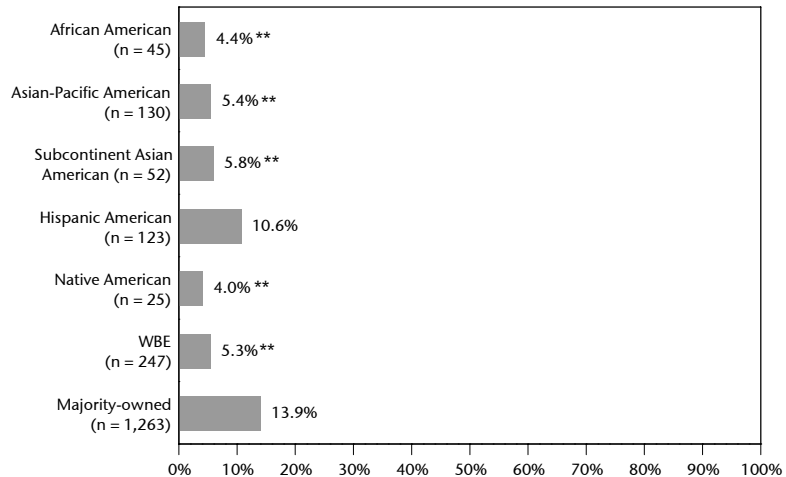
Note:

WBE is white women-owned firms.

** Statistically significant at the 95% confidence level.

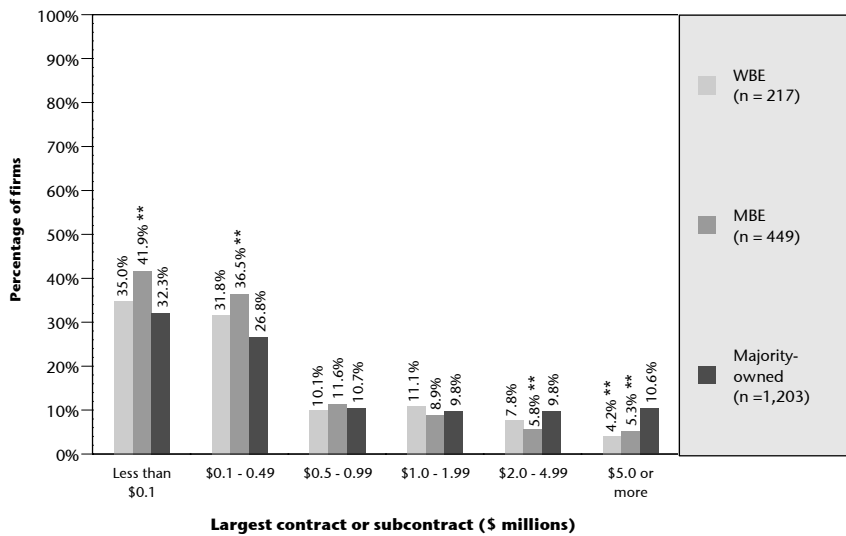
Source:

BBC Research and Consulting from 2006 Availability Survey.



Largest transportation-related contract. The study team asked firms responding to the Availability Survey to identify the largest transportation-related contract the company was awarded in California in the past five years. Relatively more majority-owned construction firms have received contracts or subcontracts of at least \$5 million compared with MBEs and WBEs. Only 4 percent of MBEs and 5 percent of WBEs had received contracts or subcontracts of at least \$5 million compared with 11 percent of majority-owned firms (see Figure F-35).

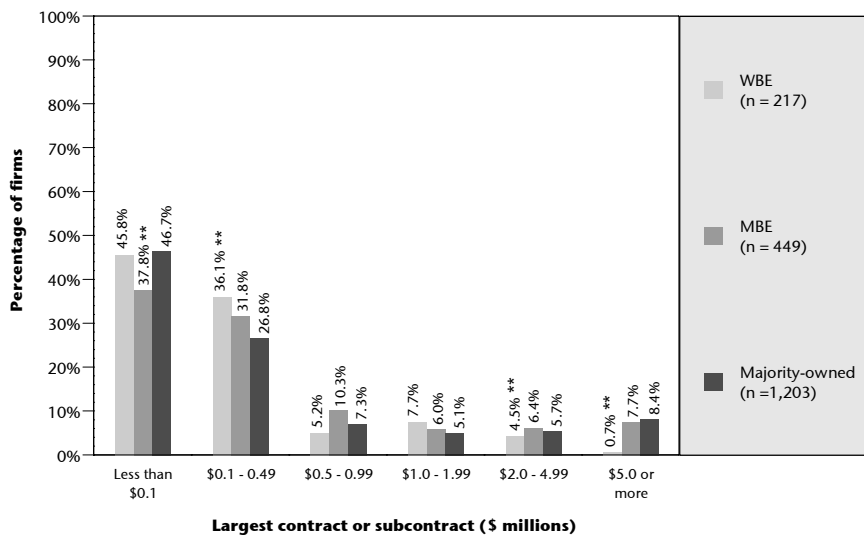
Figure F-35.
Largest transportation-related contract or subcontract that the company
was awarded in California in the past 5 years, transportation construction firms



Note: WBE is white women-owned firms.
 ** Statistically significant at the 95% confidence level.
 Source: BBC Research and Consulting from 2006 Availability Survey.

Among transportation engineering firms, about 8 percent of majority- and minority-owned firms had received contracts or subcontracts of at least \$5 million. Only 1 percent of WBEs had received work of this size. Figure F-36 examines the largest contract or subcontract received by transportation engineering firms.

Figure F-36.
Largest transportation-related contract or subcontract that the company
was awarded in California in the past 5 years, transportation engineering firms



Note: WBE is white women-owned firms.
 ** Statistically significant at the 95% confidence level.
 Source: BBC Research and Consulting from 2006 Availability Survey.

In separate analyses, presented in Appendix H, the study explored the bid capacity for all available firms in order to determine patterns in bid capacity related to the industry segment in which a firm performs its primary work and to MBE/WBE ownership status. In addition to comparing median bid capacity across these categories, the study team also specified and ran a multivariate statistical model to determine whether significant differences in a firm's bid capacity owed to the race and gender of the firm owner. These latter analyses are reported in Figure H-15 for construction firms and in Figure H-16 for engineering firms.

Past bidding on Caltrans, local agency and private sector work. The 2006 Availability Survey asked firm owners and managers whether they had submitted a bid or proposal (including submitting a price quote as a sub or supplier) on transportation-related projects in the past five years. Firms were asked about bidding as a prime or subcontractor on any part of a:

- Caltrans project;
- City, county or local transportation agency project; and
- Private sector project.

Responses only include firms that reported being qualified and interested in future Caltrans or local government transportation construction and engineering work (these were the firms answering the full Availability Survey).

The study team separately examined responses for firms in the transportation construction industry (including supply and trucking specializations) and firms in the transportation engineering industry (including engineering firms and related businesses). Preliminary results indicate the extent to which firms have pursued Caltrans, local agency and private sector work.

Transportation construction industry firms' past bidding on Caltrans work. One-third of majority-owned transportation construction industry firms reporting to be qualified and interested in future transportation construction work in the Availability Survey reported bidding on Caltrans work as a prime or a subcontractor, supplier or trucker in the past five years (including submitting price quotes). Only 13 percent had bid as a prime contractor. About 19 percent had only bid as a subcontractor (including submitting price quotes for supplies or for trucking).

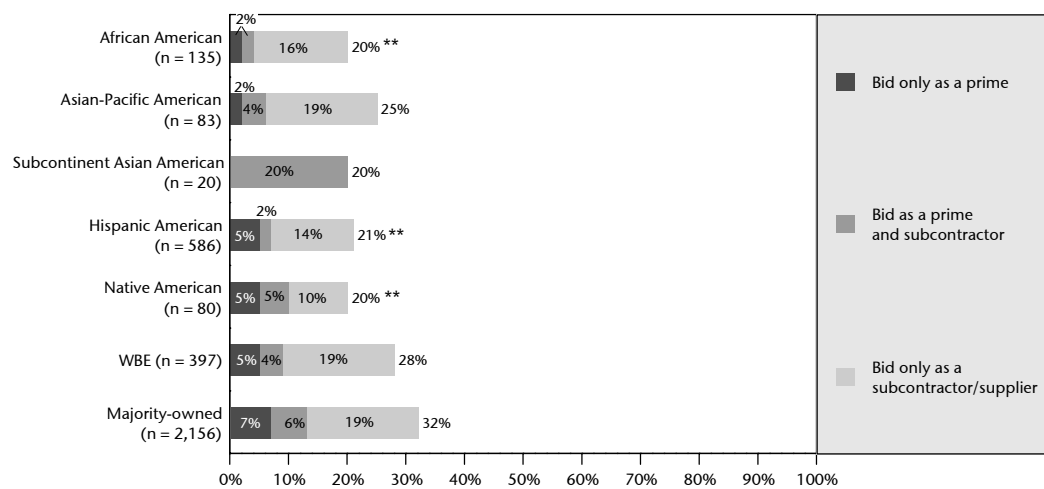
Relatively fewer minority- and women-owned firms reported bidding on past Caltrans work, as shown in Figure F-37.

- Only 20 percent of African American-, Subcontinent Asian American- and Native American-owned firms reported having bid on past Caltrans work.
- About 21 percent of Hispanic American-owned firms indicated bidding on past Caltrans work.
- One-quarter of Asian-Pacific American-owned firms reported bidding on past Caltrans work.

Majority-owned firms were more likely to have bid on prime contracts (13 percent of firms) and subcontracts (25 percent) relative to minority-owned firms. About 10 percent of Native American-owned firms and 7 percent of Hispanic American-owned firms had bid on a prime contract. Other groups of minority-owned firms were less likely to have bid on a Caltrans contract as a prime. No group of minority-owned firms were as likely to have bid on a Caltrans subcontract as majority-owned firms.

The proportion of white women-owned firms bidding on past Caltrans projects (28 percent) was relatively close to the proportion for majority-owned firms.

Figure F-37.
Percent of available transportation construction industry firms that reported submitting a bid for any part of a Caltrans project in the past 5 years



Note: WBE is white women-owned firms.
 ** Statistically significant at the 95% confidence level.
 Source: BBC Research and Consulting from the 2006 Availability Survey.

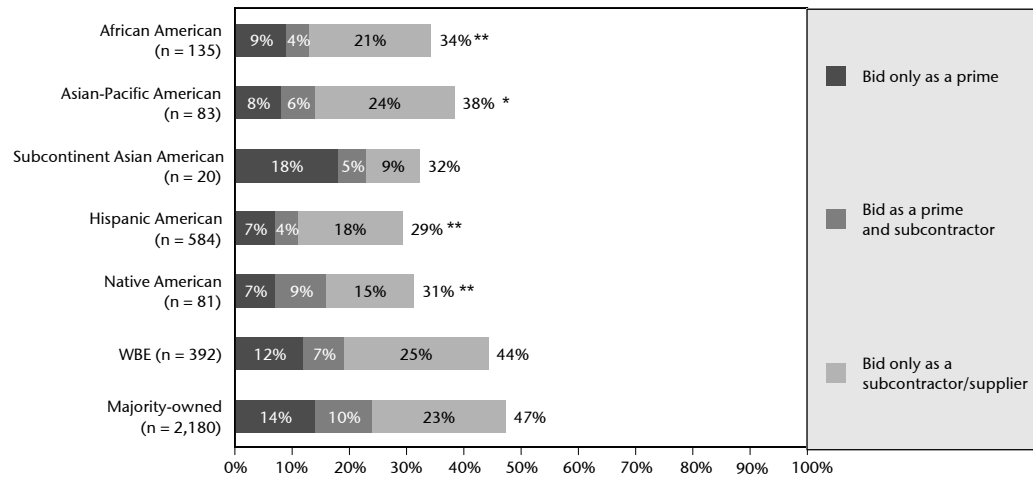
Transportation construction industry firms' past bidding on local government work.

Transportation construction industry firms were more likely to have bid on past local government transportation projects. More than 40 percent of majority-owned firms and WBEs reported bidding on city, county or other local agency transportation projects in the past five years (including submitting price quotes). From 29 to 38 percent of minority-owned firms indicated that they had bid on local projects.

Among majority-owned transportation construction industry firms, one-quarter reported bidding as a prime and one-third reported bidding as a subcontractor, supplier or trucker (with some overlap between these groups). WBEs were as likely to have bid as subcontractors, but not as likely to have bid on prime contracts.

Minority-owned firms were not as likely to have bid as primes or as subcontractors as majority-owned firms. Considerably more MBEs had bid on local projects as a prime than had bid on Caltrans projects as a prime. Figure F-38 examines these preliminary results.

Figure F-38.
Percent of available transportation construction industry firms that reported submitting a bid for any part of a local government project in the past 5 years



Note: WBE is white women-owned firms.
 * Statistically significant at the 90% confidence level.
 ** Statistically significant at the 95% confidence level.

Source: BBC Research and Consulting from the 2006 Availability Survey.

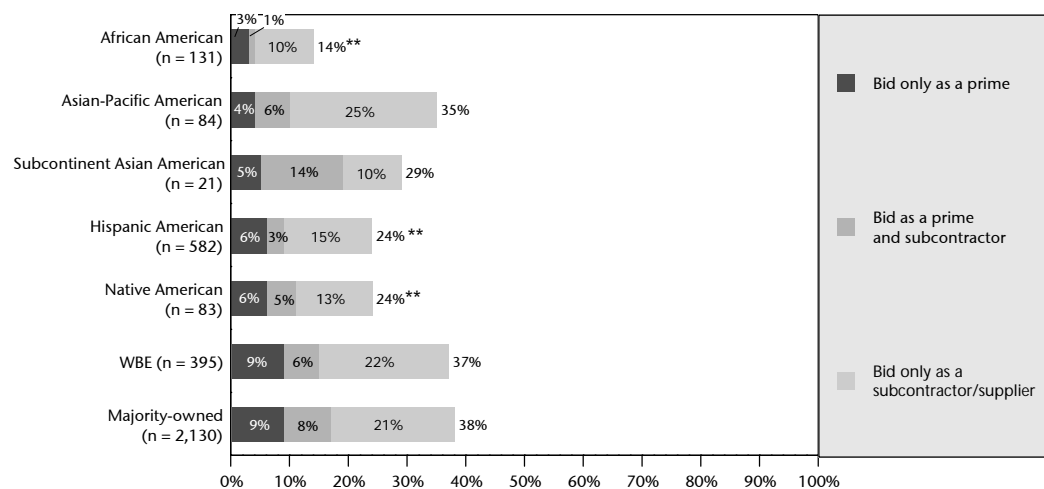
Transportation construction industry firms' past bidding on private sector work. Telephone interviewers also asked firm owners and managers if the firm had bid on a private sector transportation project in the past five years. Except for African American-owned businesses, each group of transportation industry firms was more likely to have bid on private sector work than on Caltrans work:

- Majority-owned firms were somewhat more likely to have bid on private sector work as a subcontractor as bid on Caltrans work as a sub (29 percent versus 25 percent).
- WBEs were much more likely to have bid on private sector work as a subcontractor or a prime contractor than have bid on any part of a Caltrans project.
- Minority-owned firms other than African American-owned firms were more likely to have bid on private sector work as a prime contractor and as a subcontractor.

In contrast, only 4 percent of African American-owned transportation construction industry businesses reported bidding on private sector work as a prime and only 11 percent indicated bidding as a subcontractor. African American-owned firms were more likely to have bid as primes or subs on Caltrans projects. Figure F-39 presents these preliminary results.

Figure F-39.

Percent of available transportation construction industry firms that reported submitting a bid for any part of a private sector project in the past 5 years



Note: WBE is white women-owned firms.

** Statistically significant at the 95% confidence level.

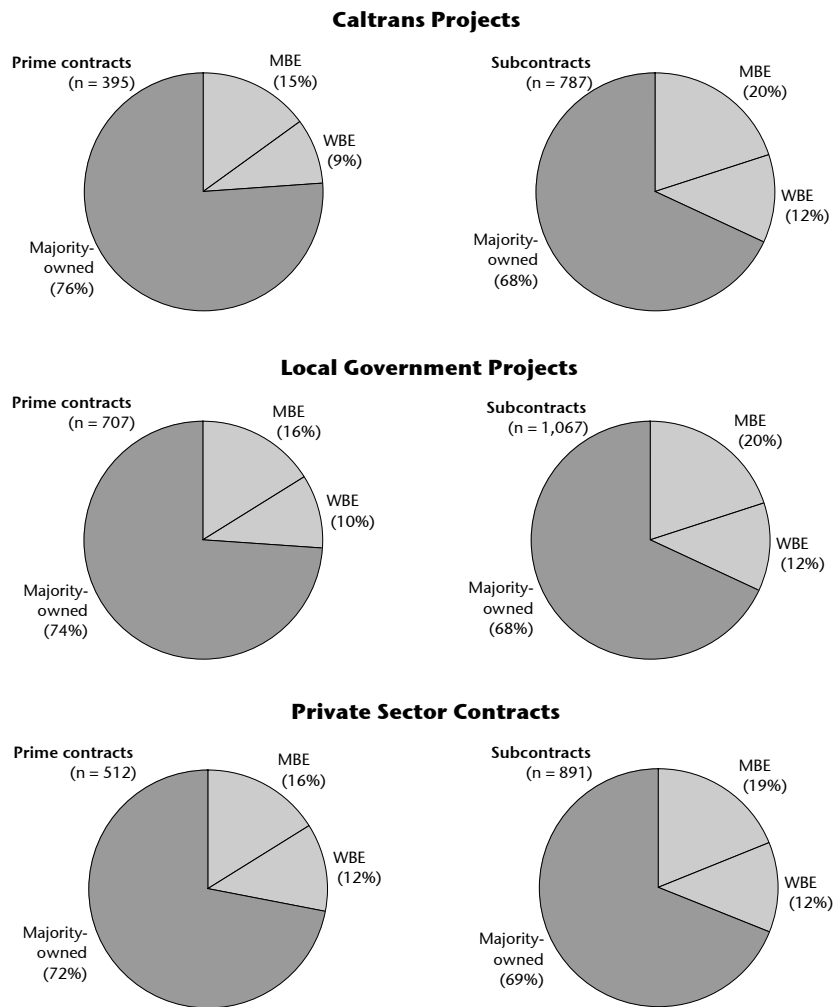
Source: BBC Research and Consulting from 2006 Availability Survey.

Summary of transportation construction firm competition for Caltrans, local agency and private sector work. The pie charts in Figure F-40 examine the relative share of all firms competing for Caltrans, local government and private sector prime contracts and subcontracts based on responses from firms in the 2006 Availability Survey.

Of the 395 transportation construction industry firms in the Availability Survey that reported bidding on Caltrans prime contracts in the past five years, 76 percent are majority-owned, 15 percent are MBEs and 9 percent are WBEs. The share of firms bidding as primes that are MBE/WBEs slightly increases for local government and private sector work.

Among the 787 firms in the Availability Survey competing for subcontracts, two-thirds of the firms are majority-owned. MBE/WBE share of firms bidding on this subcontract work varies little between Caltrans contracts, local government contracts and private sector contracts.

Figure F-40.
MBE and WBE share of transportation construction industry
firms bidding on different types of work in California in the past 5 years



Note: WBE is white women-owned firms.

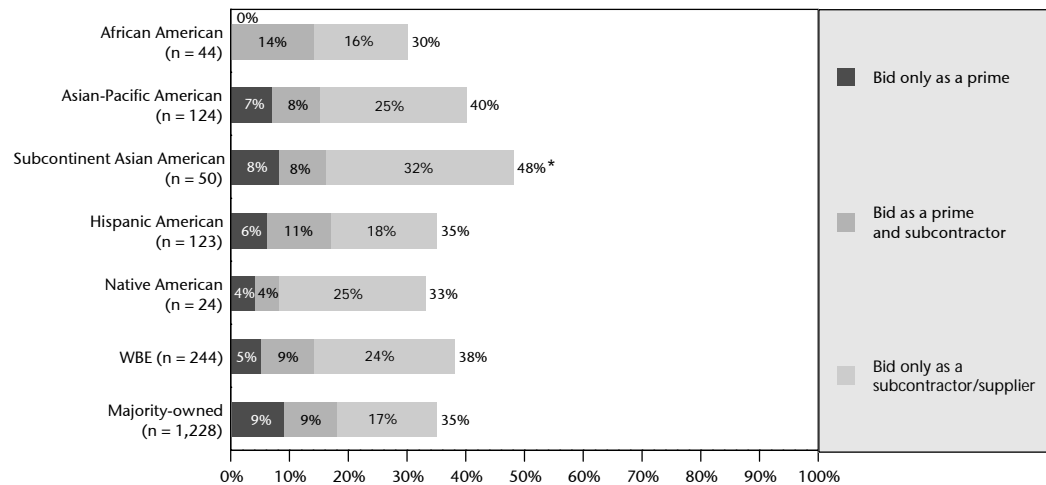
Source: BBC Research and Consulting from 2006 Availability Survey.

Transportation engineering industry firms' past bidding on Caltrans work. Transportation engineering industry firms are more likely to have bid on past Caltrans projects as a prime consultant or subconsultant than transportation construction industry firms. As shown in Figure F-41, among majority-owned firms, 35 percent had submitted proposals or proposed as a subconsultant on Caltrans projects in the past five years. About the same share of Hispanic American-owned and majority-owned transportation engineering industry firms had proposed as a prime or subconsultant on past Caltrans projects.

Preliminary results for WBEs were similar to majority-owned firms, except that WBEs were more likely to have bid as subconsultants (33 percent compared with 26 percent of majority-owned firms).

This pattern is evident for minority-owned firms as well. Most groups of firms were about as likely to have proposed on past Caltrans projects, but a greater proportion attempted to participate as a subconsultant.

Figure F-41.
Percent of available transportation engineering industry firms that reported submitting a bid for any part of a Caltrans project in the past 5 years



Note: WBE is white women-owned firms.

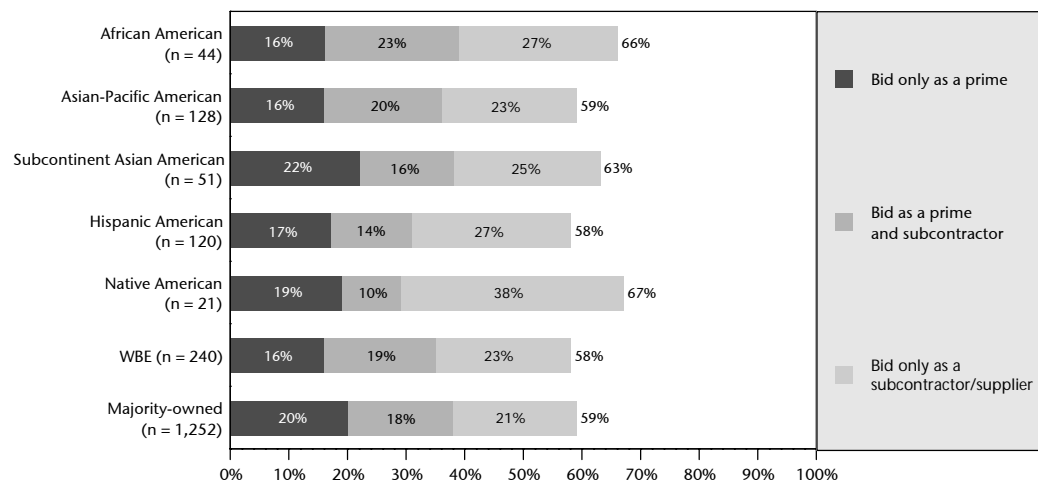
* Statistically significant at the 90% confidence level.

Source: BBC Research and Consulting from the 2006 Availability Survey.

Transportation engineering industry firms' past bidding on local government work. More than one-half of transportation engineering industry firms had proposed on prime contracts or subcontracts related to local government transportation projects in the past five years. Preliminary results presented in Figure F-42 indicate:

- Minority-owned firms were as or more likely to have proposed on local agency projects than majority-owned firms.
- A large portion of MBEs, WBEs and majority-owned firms had bid as prime consultants. Except for Hispanic American-owned firms and Native American-owned firms, MBE/WBEs were about as likely to have bid on local agency prime contracts as majority-owned firms.
- MBE/WBEs in general were more likely to have competed as subconsultants for past local agency work than majority-owned firms.

Figure F-42.
Percent of available transportation engineering industry firms that reported submitting a bid for any part of a local government project in the past 5 years



Note: WBE is white women-owned firms.

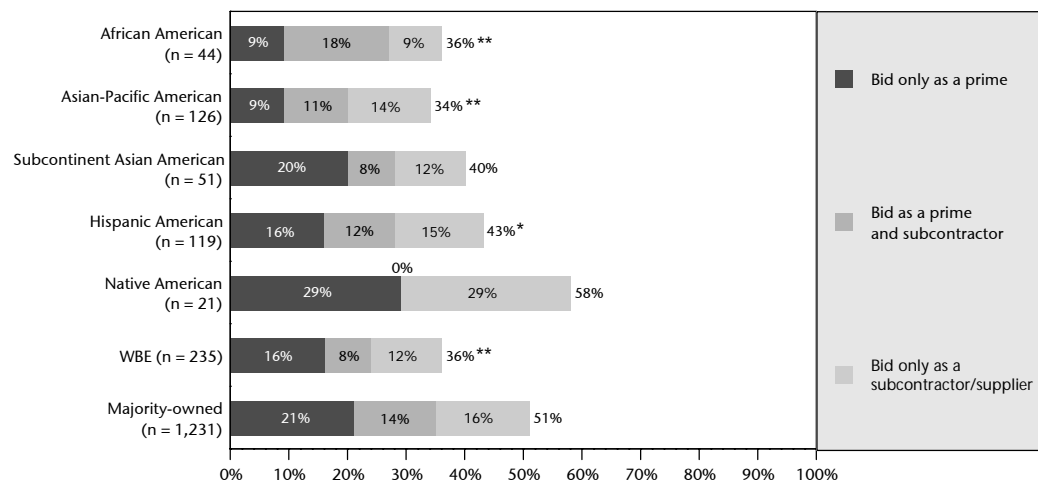
Source: BBC Research and Consulting from the 2006 Availability Survey.

Transportation engineering industry firms' past bidding on private sector work. One-half of majority-owned transportation engineering industry firms had proposed as prime or subconsultants on private sector work in the past five years. This was higher than MBEs and WBEs, except for Native American-owned firms:

- For most groups, MBEs were somewhat less likely as majority-owned firms to have bid as subconsultants.
- WBEs were far less likely to bid as subconsultants than majority-owned firms (20 percent versus 30 percent);
- Relatively fewer MBEs and WBEs had competed for private sector prime contracts compared with majority-owned firms (with the exception of native American-owned firms and firms owned by Subcontinent Asian Americans).

Figure F-43 examines this information.

Figure F-43.
Percent of available transportation engineering industry firms that
reported submitting a bid for any part of a private sector project in the past 5 years



Note: WBE is white women-owned firms.
 * Statistically significant at the 90% confidence level.
 ** Statistically significant at the 95% confidence level.

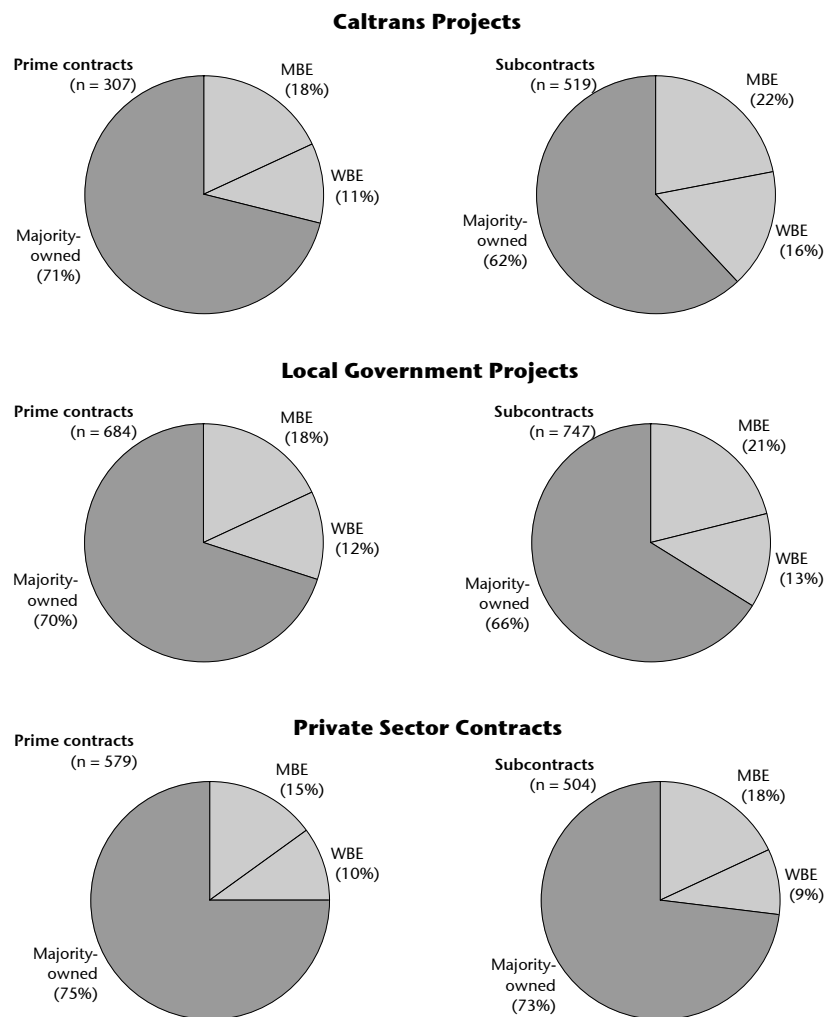
Source: BBC Research and Consulting from the 2006 Availability Survey.

Summary of transportation engineering firm competition for Caltrans, local agency and private sector work. As with transportation construction firms, the study team developed pie charts to analyze the relative share of engineering industry firms competing for Caltrans, local government and private sector prime contracts and subcontracts. These preliminary results are based on counts of firms reporting that they compete for each type of work in the 2006 Availability Survey.

As shown in Figure F-44, MBE/WBEs are a larger share of transportation engineering industry firms competing for public sector work than firms competing for private sector work (29 percent for the public sector versus 25 percent in the private sector).

MBE/WBEs comprised 38 percent of firms pursuing Caltrans subcontracts, much more than MBE/WBE representation among firms seeking subcontracts in the private sector (27 percent).

Figure F-44.
MBEs and WBE share of transportation engineering industry
firms proposing on different types of work in California in the past five years



Note: WBE is white women-owned firms.

Source: BBC Research and Consulting from 2006 Availability Survey.

Relative success of firms in pursuing Caltrans, local government and private sector work. Only a portion of the firms reporting bidding on different types of work were successful in obtaining that work. For example, two-thirds of majority-owned transportation construction industry firms that indicated bidding on Caltrans work reported being awarded some part of a Caltrans contract in the past five years. A greater share of majority-owned transportation construction firms that pursued local government work were successful in receiving that work (79 percent of bidders obtained a contract or subcontract). A similar percentage of majority-owned firms that bid on private sector work reported receiving such work.

These statistics for overall “bidding success rates” combine firms bidding as prime contractors, subcontractors, suppliers and truckers (and combines awards by type). Figures F-45, F-46 and F-47 compare success rates of minority-, women- and majority-owned firms in the transportation construction industry when pursuing Caltrans, local government and private sector work. Figures F-48, F-49 and F-50 examine preliminary results for the transportation engineering industry.

Caltrans transportation construction work. Figure F-45 examines the bidding success rates of transportation construction industry firms pursuing any part of a Caltrans contract. As shown, about two-thirds of Asian-Pacific American-, Native American- and majority-owned firms that reported bidding or submitting price quotes on Caltrans work (as primes, subs, suppliers, truckers) were successful in obtaining at least one contract or subcontract over the past five years.

In contrast, only 39 percent of African American-owned firms that bid on Caltrans work were successful in obtaining such work. WBEs had a lower success rate than majority-owned firms when pursuing Caltrans work. There were too few Subcontinent Asian American-owned firms among firms pursuing Caltrans work to include in the analysis.

Figure F-45.
Success rate of transportation construction firms bidding on Caltrans work

Note:

Success rate is the percentage of firms bidding on work in the past five years that received contracts or subcontract.

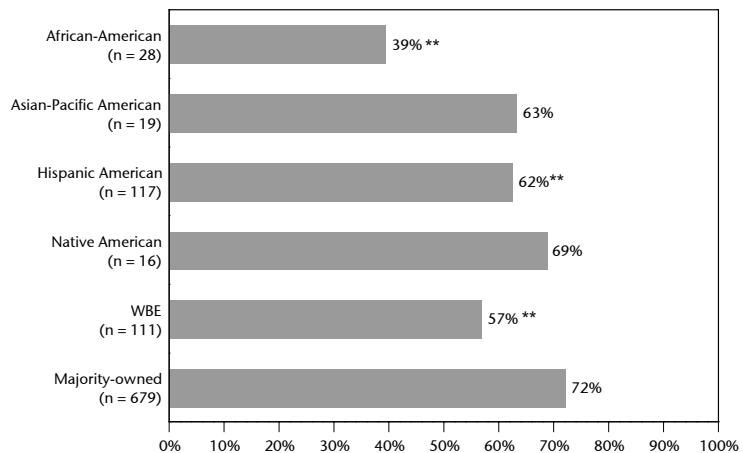
Too few Subcontinent Asian American-owned firms for analysis.

WBE is white women-owned firms.

** Statistically significant at the 95% confidence level.

Source:

BBC Research and Consulting from 2006 Availability Survey.



Local government transportation construction work. Nearly 80 percent of majority-owned transportation construction industry firms that had bid on any part of a local government contract were successful in obtaining at least one contract or subcontract. Bidding success rates were lower for African American- and Native American-owned firms.

Each group of transportation construction industry firms except for Native American-owned firms were more likely to have success in obtaining some local government work than Caltrans work (see Figure F-46).

Figure F-46.
Success rates of transportation construction firms bidding on local government work

Note:

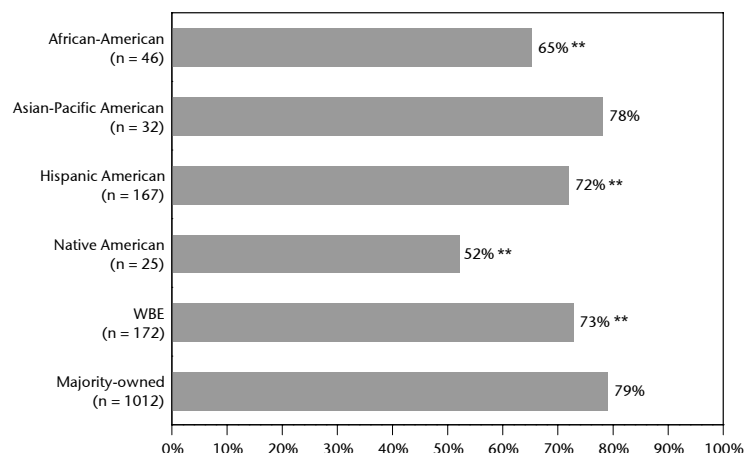
Too few Subcontinent Asian American-owned firms for analysis.

WBE is white women-owned firms.

** Statistically significant at the 95% confidence level.

Source:

BBC Research and Consulting from 2006 Availability Survey.



Private sector transportation construction work. As with local government work, 79 percent of majority-owned transportation construction industry firms that had bid on any private sector work (including subcontracts) were successfully in receiving some work from this sector. The success rate of WBEs was slightly lower.

MBEs pursuing private sector work were not as successful as majority-owned firms based on the survey responses:

- Only 44 percent of African American-owned transportation construction industry firms seeking bidding on private sector work had received contracts or subcontracts, a very large disparity. (This result is based on responses from 18 African American-owned firms that had sought private sector work.)
- About 70 percent of Hispanic American- and Native American-owned firms bidding on private sector work had obtain contracts or subcontracts.

These findings are summarized in Figure F-47.

Figure F-47.
Success rate of
transportation
construction firms
bidding on private
sector work

Note:

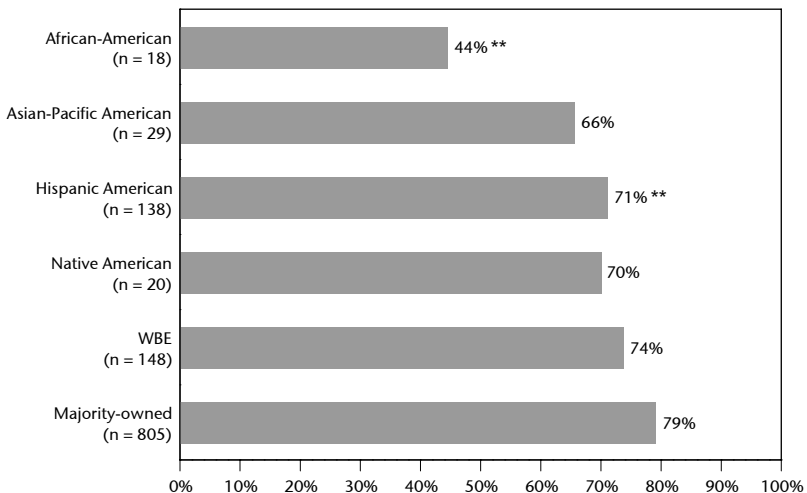
Too few Subcontinent Asian American-owned firms for analysis.

WBE is white women-owned firms.

** Statistically significant at the 95% confidence level.

Source:

BBC Research and Consulting from 2006 Availability Survey.



Caltrans transportation engineering work. The study team performed similar analyses for transportation engineering industry firms responding to the Availability Survey. (Note that there were too few Native American-owned engineering industry firms to include in the analysis.)

Figure F-48 examines the success rate of transportation engineering industry firms in obtaining Caltrans work as prime consultants or subconsultants. About 65 percent of majority-owned firms seeking Caltrans prime contracts or subcontracts were successful in obtaining some Caltrans work over the past five years. There were no substantial differences in success rates for MBEs and WBEs except for African American-owned firms responding to the survey, which had a higher rate of success pursuing Caltrans engineering work.

Figure F-48.
Success rate of
transportation
engineering firms
bidding on
Caltrans work

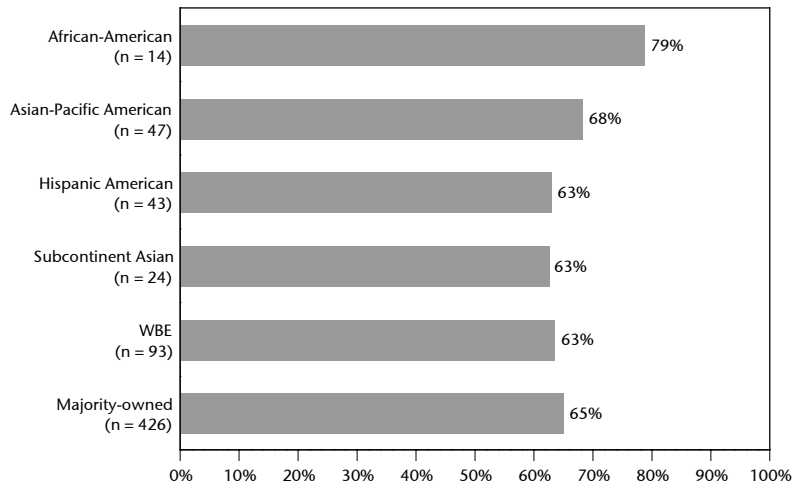
Note:

Too few Native American-owned firms for analysis.

WBE is white women-owned firms.

Source:

BBC Research and Consulting from 2006
 Availability Survey.



Local government transportation construction work. Nearly 80 percent of majority-owned transportation engineering industry firms proposing as prime consultants or subconsultants on local government work were successful in obtaining work. This success rate is similar to WBEs, Asian-Pacific American-owned firms and Hispanic American-owned firms.

African American- and Subcontinent Asian American-owned firms had lower rates of success, but these lower rates are based on responses from relatively few firms.

As with transportation construction, each group of transportation engineering industry firms was more likely to have success in obtaining some local government work than Caltrans work. Figure F-49 presents information by group.

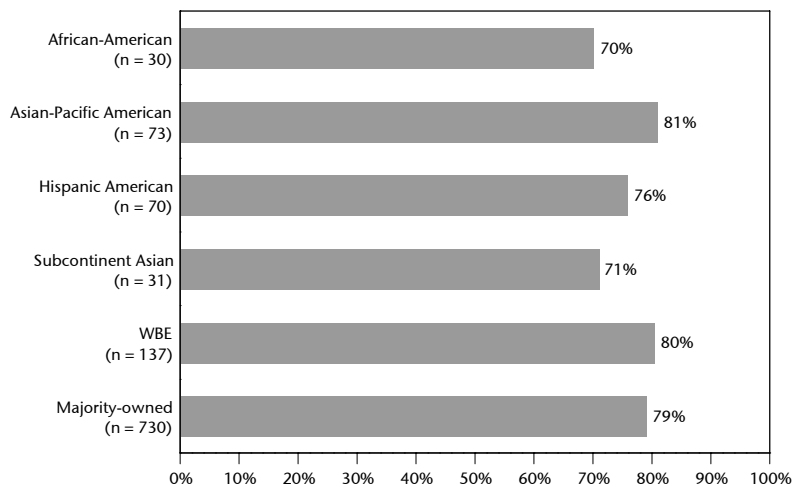
Figure F-49.
Success rate of
transportation
engineering firms
bidding on local
government work

Note:

WBE is white women-owned firms.

Source:

BBC Research and Consulting from 2006
 Availability Survey.



Private sector transportation construction work. More than 80 percent of majority-owned transportation engineering industry firms that had bid on any private sector work (including subcontracts) were successful in receiving some work from this sector.

Relatively fewer African American-owned transportation engineering industry firms were successful when seeking this work (56 percent). This is a large disparity, but based on a relatively small number of African American-owned firms that had sought private sector work (16 firms). Most African American-owned engineering-related firms had not submitted proposals for private sector prime contracts or subcontracts.

As shown in Figure F-50, other minority-owned firms and WBEs that had proposed on private sector work were about as successful as majority-owned firms.

Figure F-50.
Success rate of
transportation
engineering firms
bidding on private
sector work

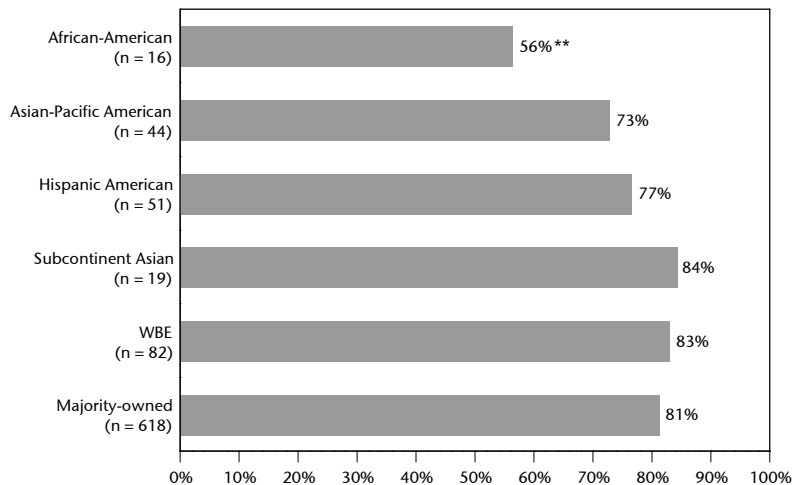
Note:

WBE is white women-owned firms.

** Statistically significant at the 95% confidence level.

Source:

BBC Research and Consulting from 2006 Availability Survey.



Summary

Certain groups of minority- and women-owned firms appear to have different market opportunities and business outcomes compared with majority-owned firms. Major findings include:

- Relatively few MBEs and WBEs in the transportation engineering industry compete for private sector contracts and subcontracts.
- A low share of African American-owned firms in the transportation construction and engineering industries that have bid on Caltrans and private sector work have been successful in obtaining work from these sectors.
- Relatively few MBE/WBEs in the transportation construction industry have been awarded large contracts or subcontracts (contracts or subcontracts of \$5 million or more).
- Relatively few WBEs in the transportation engineering industry have been awarded large contracts or subcontracts (\$5 million or more).
- African American-owned firms in California are more likely to close than other firms. In the United States, African American-owned construction firms are more likely to close than other construction firms. African Americans closing construction firms are more likely to do so because the firm is unsuccessful (national data).
- African Americans, Hispanic Americans and women who own construction firms have substantially lower earnings than other groups.

- African American-, Asian-Pacific American-, Subcontinent Asian American-, Hispanic American-, Native American- and white women-owned businesses in the transportation construction industry have lower annual revenue than majority-owned firms.
- In the transportation engineering industry, African American-, Asian-Pacific American-, Subcontinent Asian American-, Hispanic American-, Native American- and white women-owned businesses have lower annual revenue than majority-owned firms.